THE IRON AGE

Established 1855 | New York, July 14, 1910 | Vol. 86: No. 2

Published Every Thursday by the
DAVID WILLIAMS COMPANY
14-16 Park Place, New York

Entered at the New York Post Office as Second Class Mail Matter.

Subscription Price, United States and Mexico, $5.00 per Annum; to Canada, $7.50 per Annum; to Other Foreign Countries, $10.00 per Annum. Single Copies, 20 Cents.

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A Drifting Iron Market

Buyers Await Developments from Without

Pig Iron Lower, While Prices in Various Finished Products Are Gradually Yielding

For the first half of July the iron trade has been drifting and buyers are waiting for outside developments to determine their next move. Crop reports have been a foremost factor in the past week, but the estimates, while less favorable than could be wished, are far from indicating disaster, the shortage in spring wheat being compensated for in large part by promised increases in winter wheat, corn, hay and cotton. There is a disposition on the part of some leaders in the industry to base their forecasts on broader tendencies that may be of slow operation, since they involve a process of readjustment.

Reports have been scattered widely in the week of reductions in prices of steel products, some of them referring in terms to agreements among the producers to make radical cuts. The fact is that the situation as to prices has not changed from what has been noticed for weeks. There has been a gradual yielding as the volume of orders ahead of the mills has decreased. On plates and structural shapes 1.40 cents, Pittsburgh, is now more common. There are also further concessions on sheets and wire products.

Exact measurement of the shrinkage in iron and steel consumption is difficult. Some gauge may be taken from the operations of the United States Steel Corporation, which has been keeping its pig iron production closely in line with the demand upon its steel works. Its subsidiaries now have 36 blast furnaces idle, against 35 one week ago, and 74 per cent. of capacity is active.

The structural trade, while not as active as in June, is still promising. In New York City the south section of the New York Central Terminal, 10,000 tons, is about to be let. In addition to the 12,500 tons for the Western Maryland, taken by the McClintic-Marshall Construction Company, 3000 tons for the Utah Copper Company and 2500 tons for an office building are the largest contracts of the week.

Plate mills are operating at from two-thirds to three-fourths of their capacity. In the East the four steamers to be built at Newport News, two for the West Indian and two for Chesapeake Bay trade, represent about 8000 tons of plates.

Pipe line work is the salvation of the wrought pipe industry in the dullness of merchant pipe. The Texas Company has bought 100 miles of 8-in. pipe from the leading interest and 100 miles of 6-in. pipe from Steubenville, and the former has also taken 90 miles of 12-in. pipe for a natural gas line in Canada. One company has closed contracts for 30,000 tons of products for oil country use.

The railroads are not expected to make any considerable demand upon the rail mills in the balance of

the year and some intimations have been given of the postponement of deliveries, but the amounts involved are not significant thus far.

Steel bar and tin plate mills continue to lead in the extent of their activity. Iron bars are apparently a diminishing factor in the market. The labor scale settlement was never of less moment than it is this year. A further conference will be held next week.

The increased producing capacity in wire products is making a further impression upon prices. In the Pittsburgh district one interest whose mills have been shut down has started up all departments. Wire rods are weaker at Pittsburgh and have sold under $29.

Inquiries for 20,000 tons of billets have come up at Chicago, but mills in that district cannot accept the business.

Pig iron has developed further weakness, in spite of repeated announcements of the bottom. Virginia No. 2 foundry iron has been cut to $13.50 and Southern and New York State iron have made new low marks for the year. In the Cincinnati district an inquiry has come up from a steel works for 5000 tons of basic and 3000 to 4000 tons of Bessemer iron for delivery in the last half of the year. Foundries are doing little new buying, except that low priced iron is being taken in small lots to average higher priced contract iron.

Our Excessive Pig Iron Production

Over and over the reviews of the pig iron market in the past few months have called attention to the excessive production. The makers of merchant pig iron have been prompt to diagnose the situation, and there has been a general agreement among them in the statement going out from time to time that the market price was uncomfortably close to the cost of production. It has been agreed, also, that, as this condition cannot soon be cured through an increase in demand, since shrinkage and not expansion has been the rule for some months, the only alternative is such a cutting down of pig iron output as will require some inroad upon furnace stocks to take care of the current rate of consumption. In this connection it is to be noted that while stocks of iron in consumers' hands increased in the latter part of 1909 and the early weeks of 1910, somewhat to the confusing of furnacemen who had been led to think that shipments represented consumption, the furnace interests are now chiefly the carriers of stocks. This condition at least permits of closer checking up than that which preceded.

In view of all that has been written about industrial reaction and particularly the receding demand for iron and steel, the readjustment in the blast furnace industry has been moderate and comparatively slow paced. The United States Steel Corporation, with its great diversity of products, has means of knowing promptly the condition of the steel industry as a whole, and also is able to make prompt adjustments. Its pig iron output, therefore, is capable of rapid regulation, and thus may become a fairly close index to the drift of things. In the past two months the corporation has seemingly made a larger proportionate curtailment than the independent steel companies. The latter, however, have been coming more closely in line within the past two weeks, several of their furnaces having blown out in that time.

As stated in these columns one week ago, the reduction from the high level of pig iron production reached in February—85,616 tons a day for coke and anthracite pig iron—has now amounted to about 15 per cent., making allowance for several furnaces that have stopped since July 1. It is evident from the condition of the market—and every consumer who goes out to buy a round lot discovers it—that the weight of accumulated stocks is being increasingly felt. One producer, who may be easily financing his accumulated iron, refuses to consider a low offer, but the buyer finds another who is willing to accept it on a single contract which will keep his furnace stocks from becoming unmanageable.

The question which the merchant furnace interest has now to answer is whether the situation is to be allowed to drag on as in recent weeks, with the possibility of further weakness as the necessities of sellers may become a larger factor, or whether by a more heroic process the supply of iron shall be cut down to the smaller needs of the country. Sentiment in favor of a very general banking of merchant furnaces for two, three or four weeks has been finding more frequent expression of late, but for well-known reasons no movement will be undertaken to make such sentiment effective. It is now about 20 years since a movement for a 30-day banking of furnaces was started at Louisville, Ky., but it failed of general co-operation. In the Mahoning and Shenango valleys such methods have been employed at intervals in the past 15 years, with temporary good effect. In the spring of 1898 the National Association of Non-Bessemer Pig Iron Manufacturers was all but organized and the assent of 80 per cent. of the capacity was secured to a plan of regulating output. But good times came on while the other 20 per cent. was being labored with and the crisis which the merchant pig iron industry seemed to be facing was avoided. To-day such an association would promptly invite attention from the national Department of Justice.

Naturally those furnaces which have their own ore and coke would be expected to run longer on such a market as to-day's than purely merchant furnaces. Recent competition would indicate, moreover, that some of the former have been willing to surrender a fraction of their theoretical profit on ore. Yet it would seem that such differences of status in the trade are having less to do with the policy of producers than considerations that are affecting all industries, for ore-buying makers of pig iron are selling ahead with the same apparent freedom as are ore miners. In fact, the persistence of so many blast furnaces might be taken as evidence of stronger faith in improvement later in the year than current developments are calculated to inspire.

Ambiguities of the New French Tariff

Manufacturers of machinery are concerned over certain ambiguities of the new French tariff. Several of its provisions give promise of serious complication as well as of expense to American exporters. Speaking broadly, without going into the details of the schedules, sharp discrimination is made against a precision tool, as compared with less delicate mechanisms, and against the accessory of a machine as compared

with those parts which are considered indispensable to its operation. An exact definition of the terms in their application to machine tools and machinery will probably be impossible. According to the correspondents of American manufacturers, French commissions are now engaged in this complicated, but essential, task. A micrometer caliper is a precision tool, but it is asked, Is a 25-cent spirit level to be placed in the same category? Probably a similar distinction would be made between milling machines of the several grades. Certainly the difference exists among the grinding machines. It is further asked, To how many change gears is a machine entitled? Where does the excess begin and the classification change to that of accessory? Endless disputes will arise between importers into France and the customs officials, with frequent recourse to the courts. Perhaps precedents will finally accumulate to establish a standard practice controlling the great majority of questions. The criticism of the Americans is not of the tariff rates, but of the vague wording of a statute affecting not only the French people, but also those countries whose exports of machinery and tools are absorbed by the republic.

Living Up to Agreed Deliveries

Machinery buyers are renewing their complaints that some of the machine tool builders and dealers are not living up to their promises of deliveries—a criticism which always accompanies a return of large demand. A natural impulse of a salesman, either in or out of the home office, is to permit his zeal in landing an order to render him ultra-sanguine in his promises as to shipments. Very often a few weeks' difference in quoted delivery determines the placing of business. Not a few sales have been made of late where the deciding factor was the promise of early shipment, even in the face of lower figures offered by competing houses.

The temptation is great to sell on a theoretical rate of production of machinery. The chances are usually against the maintenance of such a rate, and salesmen should not permit themselves to trust to luck to help them out. In the long run such a policy does not pay, and each year more of the machinery people are realizing the fact and are adhering to the rule that so far as it lies within their power they will deal fairly with their customers in this respect.

A reputation for fulfilled promises counts for a great deal. The buyer will probably associate the characteristic with reliability of statements as to the machinery itself. Strive as a machine builder may, he cannot always do as he agrees, but his plans should be laid with sufficient skill, founded on the records of a good shop system, so that the danger of being compelled to transgress against the delivery clause of the contract would be very small. Occasionally a manufacturer may be able to better the date of a shipment, which then emphasizes the intention to live up to his word.

One of the arguments advanced in the trade against the feasibility of enforcing a non-cancellation clause in machinery contracts is that in a large percentage of cases the contracts are broken by the manufacturers themselves through failure to make the specified deliveries. Probably this is an overstatement, but there is certainly too much laxity in living up to the letter of a contract with regard to deliveries. Punctuality should be cultivated until it becomes a habit.

Steel Quality an Issue in Germany

Considerable space is given in this issue of *The Iron Age* to special correspondence from the International Congress of Mining and Metallurgy at Duesseldorf and to abstracts of the important papers read at the section of Practical Metallurgy. These emphasize again the extent of our debt to German engineers for literature of the advance made in iron and steel and related industries in the past 15 years. The Duesseldorf Congress is monumental in the number and character of the papers it has contributed on subjects of first importance to iron and steel works engineers and to all who would know the conditions of the international competition in steel works products as affected by German development.

Probably the most interesting matter brought before the section of Practical Metallurgy was the paper which is reviewed at length on other pages, dealing with the status of the basic Bessemer steel process in Germany. American steel manufacturers are not alone in their struggle with the problem of higher quality rail steel which the railroads have been crowding upon them with growing insistence. Those who in the midst of the agitation of three years ago were urging our railroads to place their rail orders abroad may be surprised to know how the basic Bessemer process, the pillar of the German steel industry, has been put on the defensive in a similar campaign for high rail quality that has been waged in Germany. It will be seen, moreover, that oxygen, far more than phosphorus, is the German steel maker's enemy. Not only has the question of the quality of the steel produced in such quantities by the basic Bessemer converters of Germany become an issue in international markets, but it is raised by the increasingly rigid specifications of the German state railroads. It will be no small factor also in the work of the committees representing the United States, Germany and Great Britain, that have undertaken to harmonize the steel specifications of the three countries.

In this international contest, involving the claims of the converter and the open hearth processes, in which German producers, with their large dependence on Minette ores, are chief sponsors for the converter, we can see how the electric furnace is to loom up more and more, in conjunction with the pneumatic process, as a guarantor of rail quality.

Useless Machinery Requirements

Some buyers of machinery make it a practice to impose unusual specifications in contracting for new equipment. With this class of customers no standard machine seems to meet the wants of their shops. They would have it a little different. Manufacturers, and more particularly dealers, are obliged for this reason to endure many annoyances in overcoming what they believe to be mistaken theories. The trouble usually lies with one man in the buyer's works who believes he can improve upon the accepted practice. He likes to change the range of speeds or feeds or make some other correction in design which creates additional costs for the builder and, presumably, for the customer.

More times than not the change is useless or actually undesirable from the standpoint of results. Occasions arise when departures from the standard type are necessary, and the builders are then glad to co-operate with and give the benefit of their expert knowledge to their customers.

Users of machinery, however, should realize that, as they know more of their own products than do the machine tool builders, so do the latter know more of their machines than can possibly be learned from the user's individual experience. It is each to his trade and each reaping the advantage of the special skill acquired by the other. A chuck maker knows more about chucks than the lathe builder, and the lathe builder knows more about lathes than the chuck manufacturer. Yet each uses the other's product continuously. Usually, the man who would needlessly alter the specifications of a standard machine has as his own product something foreign to the machine tool business. Men should learn to depend upon the knowledge of proved specialists rather than to rely upon their own observations, which must of necessity be crude by comparison.

June Copper Production and Stocks

The June statistics, issued by the Copper Producers' Association, contain the following statement of production and stocks:

	Pounds.
Stock of marketable copper of all kinds on hand at all points in the United States, June 1	160,425,973
Production of marketable copper in the United States from all domestic and foreign sources during June	127,219,188
Deliveries of marketable copper during June:	
For domestic consumption	53,363,196
For export	65,895,948
Total	119,259,144
Stock of marketable copper of all kinds on hand at all points in the United States, July 1	168,386,017

The report shows an increase of surplus stocks during the month of 7,960,044 lb.

The Sturtevant Salesmen's Convention.—The salesmen of the B. F. Sturtevant Company, Hyde Park, Mass., are known personally to so many engineers that it is a matter of interest to note their convention which was held June 15 to 18. The branch office managers and salesmen from all over the country assembled at the works and general offices at Hyde Park and spent four very busy days in going over general business matters. The evenings were enlivened by banquets and other social features. The last day of the convention closed by a sail down Boston harbor, with an afternoon and evening spent as guests at the Cohassett home of E. N. Foss, treasurer of the company. The convention was marked by great enthusiasm as the company was just finishing, July 1, the largest business year in its history. A fine photograph was taken of the participants. It showed a number of the men holding small multivane wheels, such as are used in the Sturtevant Ready-to-Run electric ventilating sets. In the background were huge multivane wheels used for tunnel ventilation.

The Bunting Brass & Bronze Company, Alliance, Ohio, has its plans practically complete for the erection of a foundry, 54 x 250 ft.; machine shop, 54 x 100 ft., and several buildings of less size for warehouses, pattern vault, &c. The construction will be steel, concrete and brick, absolutely fireproof, designed for both light and heavy casting and for the finishing of small, duplicate brass parts. It has not been definitely decided as to where the company will locate, but the probabilities are that it will be further west than Alliance.

Early Iron Making in Eastern Pennsylvania

Historical Places Being Marked by Tablets

The Chester County Historical Society of Pennsylvania, which has been active in the marking by tablets the sites of various early iron manufacturing plants in that county, unveiled a tablet on the wall of the Phoenix Iron Company's pattern storage house, Phoenixville, Pa., marking the site where iron was first rolled at that place in 1783. The inscription on the tablet reads: "Near this point is the site of the rolling mill, where in 1783 was rolled the first iron in Phoenixville, marked by the Chester County Historical Society, 1910." The history of the iron industry in Phoenixville dates from May, 1783, when there was there established a small rolling mill and nail factory.

A similar tablet will be placed by the society at Coventryville, marking the site of the Coventry Forge, which will bear the inscription, "The second iron works in the Province, and the first in Chester County, was here built by Samuel Nutt in 1717. Mordicai Lincoln, ancestor of Abraham Lincoln, was part owner and blacksmith in 1725. Last heat in 1870. Marked, 1910, by the Chester County Historical Society."

At Warwick Furnace the society will place a tablet bearing the inscription, "Warwick Furnace, built here 1737 by Mrs. Samuel Nutt, was the third blast furnace in Chester County. The first Franklin stove was cast here and also cannon and cannon balls for the Revolutionary Army. Last iron was made in 1867. Marked, 1910, by the Chester County Historical Society."

The society on July 2 unveiled a tablet at the Lukens Iron & Steel Works, Coatesville, Pa., marking the site where the first boiler plate was rolled by Dr. Charles Lukens, about 1820, a full account of which was printed in *The Iron Age* of July 7.

In connection with the unveiling of the Phoenixville tablet, addresses were made by George B. Johnson of the Chester County Historical Society, and Chester M. Spare, who accepted the tablet. Mr. Spare also spoke briefly of the early history of the Phoenix Iron Company. The date of the incorporation of the present company was in 1855. This was the result of development of a plant established many years previously, in which David Reeves, formerly president of that company, acquired a partnership as early as 1827, from which date the Reeves family have been the leading factors in the history of the iron manufacture in Phoenixville. In 1846 a rail mill was built at this plant, and the manufacture of rails extensively engaged in. It was in 1855 that the company began the manufacture of structural shapes. On the mill erected at that time were rolled the first beams and shapes made in America, the largest size being a 9-in. beam. In 1861 beams 15-in. in depth were rolled; bridge building was later engaged in, and from time to time greater facilities were added, bringing the plant up to its present high state of efficiency and wide range of product. In the early days the product was of iron, the manufacture of steel being taken up more recently.

The Canadian Northern Railway Company has been called upon by the Premier of Alberta to fence in lines and right of way in that province, and the work, which was ordered at the instance of farmers living along the lines, is to be begun at once. As the mileage of unfenced lines is great, a heavy tonnage of wire will be required.

The American Boiler Manufacturers' Association of the United States and Canada will hold its next annual convention in Chicago, October 10 to 13. The headquarters will be in the Auditorium Hotel.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July 13, 1910.	July 6, 1910.	June 8, 1910.	July 14, 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	*$16.25*	$16.25	$16.75	$16.50
Foundry No. 2, Southern, Cincinnati	*14.75*	14.75	15.00	15.75
Foundry No. 2, local, Chicago	*16.50*	16.75	16.75	17.00
Basic, delivered, eastern Pa.	*15.75*	15.75	16.25	15.50
Basic, Valley furnace	*14.50*	14.50	14.75	15.00
Bessemer, Pittsburgh	*16.40*	16.40	16.65	16.40
Gray forge, Pittsburgh	*14.40*	14.90	15.40	14.90
Lake Superior charcoal, Chicago	18.50	18.50	18.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	*25.00*	25.00	25.50	23.00
Forging billets, Pittsburgh	*30.00*	30.00	31.00	27.00
Open hearth billets, Philadelphia	*28.50*	28.50	29.00	25.00
Wire rods, Pittsburgh	*29.00*	30.00	31.00	29.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	*13.00*	13.50	15.00	14.50
Steel rails, melting, Philadelphia	*14.25*	14.25	14.50	16.00
Iron rails, Chicago	*16.75*	17.00	17.00	17.00
Iron rails, Philadelphia	*19.00*	19.00	20.00	19.50
Car wheels, Chicago	*14.75*	15.00	15.50	16.00
Car wheels, Philadelphia	*14.50*	14.50	15.00	14.75
Heavy steel scrap, Pittsburgh	*14.50*	15.00	15.25	15.75
Heavy steel scrap, Chicago	*12.25*	12.75	13.50	14.00
Heavy steel scrap, Philadelphia	*14.25*	14.25	14.50	16.00
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	*1.47½*	1.47½	1.50	1.45
Common iron bars, Chicago	*1.40*	1.40	1.47½	1.35
Common iron bars, Pittsburgh	*1.50*	1.50	1.55	1.45
Steel bars, tidewater, New York	1.61	1.61	1.61	1.41
Steel bars, Pittsburgh	1.45	1.45	1.45	1.25
Tank plates, tidewater, New York	*1.56*	1.61	1.66	1.51
Tank plates, Pittsburgh	*1.40*	1.45	1.50	1.35
Beams, tidewater, New York	*1.56*	1.61	1.66	1.51
Beams, Pittsburgh	*1.40*	1.45	1.50	1.35
Angles, tidewater, New York	*1.56*	1.61	1.66	1.51
Angles, Pittsburgh	*1.40*	1.45	1.50	1.35
Skelp, grooved steel, Pittsburgh	1.50	1.50	1.50	1.30
Skelp, sheared steel, Pittsburgh	1.60	1.60	1.60	1.40
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	*2.30*	2.30	2.40	2.20
Wire nails, Pittsburgh*	1.80	1.80	1.80	1.70
Cut nails, Pittsburgh	*1.70*	1.75	1.75	1.70
Barb wire, galv., Pittsburgh*	2.10	2.10	2.10	2.00
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*12.62½*	12.75	13.00	13.12½
Electrolytic copper, New York	*12.37½*	12.37½	12.75	13.00
Spelter, New York	**5.20**	5.20	5.15	5.35
Spelter, St. Louis	**5.05**	5.05	5.00	5.27½
Lead, New York	**4.40**	4.40	4.37½	4.35
Lead, St. Louis	**4.25**	4.25	4.22½	4.25
Tin, New York	*32.65*	32.80	32.85	28.90
Antimony, Hallett, New York	8.12½	8.12½	8.12½	7.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.64

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c., net; I-beams over 15 in., 1.55c., net; H-beams over 8 in., 1.65c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.50c., net; angles, over 6 in., 1.55c., net; angles, 3 x 3 in., and up, less than ¾ in., 1.65c., base, half extras, steel bar card; tees, 3 in. and up, 1.55c., net; zees, 3 in. and up, 1.50c., net; angles, channels and tees, under 3 in., 1.40c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.75c., net; hand rail tees, 2.75c., net; checkered and corrugated plates, 2.75c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 and 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c.; No. 29, 2.35c.; No. 30, 2.45c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.20c.; No. 28, 3.40c.; No. 29, 3.50c.; No. 30, 3.75c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe now in effect:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛ and ¼ in.	70	54	66	..
⅜ in.	71	57	67	53
½ in.	74	62	70	58
¾ to 6 in.	78	68	74	64
7 to 12 in.	72	57	68	53
Plugged and Reamed.				
1 to 4 in.	76	66	72	62
Extra Strong, Plain Ends.				
⅛ to ⅜ in.	63	51	59	47
½ to 4 in.	70	58	66	54
4½ to 8 in.	66	54	62	50
9, 10, 11 and 12 in.	54	42	..	..
Double Extra Strong, Plain Ends.				
½ to 8 in.	59	48	55	44

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 5 in.	69	55
6 to 13 in.	61	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $29 to $30.

Steel Rivets.—Structural rivets, ¾-in. and larger, 2.15c., base; cone head boiler rivets, ¾-in. and larger, 2.25c., base; ⅝-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1-in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are those quoted on contracts for large lots, makers charging the usual advances of $2 to $3 a ton to the small trade.

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Pittsburgh

PARK BUILDING, July 13, 1910.—(*By Telegraph.*)

Pig Iron.—The largest inquiry for pig iron in the market at present is that of a Kentucky steel company, which is inquiring for 5000 tons of basic and 3000 to 4000 tons of Bessemer for last half delivery. The general inquiry is perhaps a little better, but it is altogether for small lots, consumers not being assured that bottom has been reached and are not willing to take on iron for a long delivery ahead, even at present low prices, which to some furnaces are certainly below the actual cost of making it. We quote standard Bessemer iron at $15.50; basic, $14.50; malleable Bessemer $14.75; No. 2 foundry, $14.25, and gray forge, $13.50, all at Valley furnace, the freight rate for delivery in the Pittsburgh district being 90 cents a ton.

Steel.—New inquiries for billets and sheet and tin bars are very light and prices on both Bessemer and open hearth steel are weak. A local tin plate mill has sold its entire output of tin scrap to a steel interest and has contracted for its tin bars with the same concern for the last half of the year. We quote Bessemer billets, 4 x 4 in., $25; Bessemer sheet bars in random lengths, $26; 4 x 4 in. open hearth billets, $26.50 to $27; open hearth small billets, $27.50 to $28; open hearth sheet and tin bars, $27.50 to $28, and forging billets, $30 to $31, all f.o.b. Pittsburgh, Wheeling or Youngstown district, with freight to point of delivery added.

Steel Rails.—The Carnegie Steel Company will put its rail mill at the Ohio Works, Youngstown, Ohio, on open hearth steel rails in a few days to roll an order, in preference to shipping the cold open hearth blooms to its Edgar Thomson mills. The Ohio Works rail mill will likely run on open hearth rails for three or four weeks, or until this order is filled, which is said to be for export trade.

Pipe.—It is stated that the National Supply Company, Pittsburgh, has secured an order for about 30,000 tons of oil country goods, consisting of casing, tubing and drive pipe, for shipment to one of the large oil interests in California.

Wire Products.—Reports are current of an official reduction of about $2 a ton to be made in rods, wire and wire nails within a day or two, but confirmation of the reports has not been obtained.

(*By Mail.*)

The first half of July shows a little better feeling in the iron trade. Reports are received from several of the leading steel concerns that specifications against contracts so far this month have shown a slight increase over the last half of June. It is believed that while July and August will be comparatively dull months in the iron trade, with the opening of September a revival in the general demand will start. The railroads have bought very little material since the first half of 1907, and it is positively known from reports received by leading steel companies from their selling agents throughout the country, that practically all the leading railroads are badly in need of rails, engines, cars and other material. The local pig iron trade continues quiet, with some doubt as to whether prices have touched bottom, in spite of the fact that to some furnaces they are now below the actual cost of making iron and have been for some time. While Bessemer iron is held nominally at $15.50 and basic $14.50, Valley furnace, it is possible that these prices might be shaded on firm offers and on iron for third quarter. The market on both open hearth and Bessemer steel is showing some signs of distress and prices are lower than they have been in some months. It is believed that 4 x 4 in. open hearth billets could be bought very close to $26, Pittsburgh.

Ferromanganese.—No new inquiry of moment has been in this market in the past week, and the situation is very quiet with prices weak. We quote 80 per cent. foreign at $39 to $39.50, Baltimore, the freight rate for delivery in the Pittsburgh district being $1.90 a ton.

Ferrosilicon.—The market is very dull, new inquiry being light and only for small lots. Most consumers are pretty well covered on their requirements for the balance of this year. We quote 50 per cent. ferrosilicon at $57.50 to $58, delivered, Pittsburgh. We quote 10 per cent. at $23; 11 per cent., $24, and 12 per cent., $25, all at Ashland furnace, to which $1.90 a ton should be added for delivery in the Pittsburgh district.

Rods.—New inquiry for rods is light, and no sales of moment have been made in this market for some time. Prices are weak and Bessemer rods may be fairly quoted at $29 to $30 and open hearth and chain rods at $30 to $31, Pittsburgh.

Skelp.—There is a pronounced scarcity of both grooved and sheared iron plates, due to the shut down of several plants in the Pittsburgh and Youngstown districts, that have not arranged the puddling scale with their men. Prices are firm, and higher prices are being asked on iron plates. For ordinary widths and gauges we quote grooved steel skelp at 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.80c., and sheared iron skelp, 1.90c., all f.o.b. mill, Pittsburgh.

Steel Rails.—In the past week the Carnegie Steel Company entered new orders for 2400 tons of light rails and received specifications against contracts for about 1000 tons. A good part of the output of the Edgar Thomson rail mills is open hearth rails, the blooms being brought from the Homestead Steel Works and reheated. At their present grit the Edgar Thomson rail mills are pretty well filled up with specifications for light rails and also for standard sections into September. We quote steel axles at 1.75c. to 1.80c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 to 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill.

Structural Material.—The McClintic-Marshall Construction Company has taken in the past week upward of 12,000 tons of bridge work for the Western Maryland Railroad. The American Bridge Company has taken several contracts, one of 3000 tons of Western bridge work and another of about 2500 tons for an office building. Prices are only fairly strong, and for delivery in the Pittsburgh district are 1.45c., but in competitive business, for delivery outside of the Pittsburgh district, beams and channels up to 15-in. are quoted at 1.40c., Pittsburgh.

Plates.—It is stated that the Atlantic & Porto Rican Steamship Company has placed orders for two passenger boats with the Newport News Shipbuilding Company, which will require 2500 to 3000 tons of plates and shapes, and which will be furnished by the Carnegie Steel Company. The Baltimore & Ohio Railroad opened bids Tuesday for 1000 hopper bottom cars, and has just placed a contract with the Baldwin Locomotive Works for 50 locomotives. It is probable that the shapes, axles and wheels for these locomotives will be furnished by the Carnegie Steel Company, while the plates will go to an Eastern mill. It is also stated that the Toledo Shipbuilding Company has recently taken a contract for a lake boat, which will require 3000 to 4000 tons of plates. We quote ¼-in. and heavier plates for delivery in the Pittsburgh district at 1.45c., and for delivery outside the Pittsburgh district at 1.40c., Pittsburgh.

Sheets.—The leading sheet mills deny that any official reduction in prices has been discussed. The reports of such a reduction probably arose from the fact that for several months prices on the lighter gauges of black sheets have been shaded by some mills from $2 to $3 a ton, and on galvanized from $3 to $4 a ton. These concessions in prices are being made now by sheet mills that some time ago refused to enter contracts at less than the official prices. The present demand for black and galvanized sheets is fair, while on blue annealed and electrical sheets the mills are pretty comfortably filled for the next several months. The American Sheet & Tin Plate Company is operating to about 80 per cent. of its sheet capacity, its only idle plant being the Aetna-Standard Works at Bridgeport, Ohio, containing 23 hot mills, which has not turned a wheel for more than a year. Other sheet mills report they are operating to about full capacity and have a fair amount of work ahead. Official prices on sheets, which, however, do not now represent the actual market, are based on 2.40c. for No. 28 black and 3.50c. for No. 30.

Tin Plate.—This product continues to be the most active on the whole list of finished iron and steel, and while new buying at present is not heavy, all the leading tin plate mills are pretty well filled up for the balance of this year if consumers take out all the tin plate for which they have made contracts. The tomato and corn crops this year promise to be very heavy, and this will mean a tremendous consumption of tin plate by the canneries later in the season. The American Sheet & Tin Plate Company is operating practically to full capacity all its plants except the Laughlin and La Belle Works in the Wheeling district, and no efforts have been made to start these plants. The Jones & Laughlin Steel Company is now making deliveries of tin plate from its first unit of 12 mills, which was started up some time ago, and expects to put on additional tin mills within the next two months. Prices on tin plate are firm, and we quote on the basis of $3.60 for 100-lb. cokes per base box, f.o.b. Pittsburgh.

Bars.—Specifications will soon commence to come in on the heavy contracts for steel bars placed in May and June by the implement and car builders, some of these contracts running from July to December and others from July over the next year. The railroads have not been specifying very liberally against their contracts for steel and iron bars, and a good deal of tonnage on these contracts, which should have been taken out in the second quarter, has been carried over into third quarter. The local steel bar mills are busy on

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specifications which are coming in freely, and shipments this month will no doubt be very close to June, which was a heavy month. The Republic Iron & Steel Company has started up its works in Youngstown, Ohio district, which were closed down June 30 for inventory and repairs. No settlement has yet been reached between the Western Bar Iron Association and the Amalgamated Association on the puddling scales, but another meeting will likely be held about July 20. The puddling department of the Youngstown Sheet & Tube Company is shut down, this concern not having reached an agreement with the Sons of Vulcan on the puddling scale. Most of the other bar iron mills in the Central West are running under the terms of the clause in the scale which allows them to run, pending settlement of the puddling and finishing scale. New demand for iron bars is light, and several of the mills are in need of specifications. We continue to quote steel bars at 1.45c. and iron bars at about 1.50c., f.o.b. Pittsburgh.

Spelter.—A little more activity in demand is reported, and prices are possibly a shade firmer. We quote prime grades of Western at 4.95c. to 5c., East St. Louis, carrying a freight rate of 12½c. per 100 lb., for delivery in the Pittsburgh district.

Hoops and Bands.—New demand for hoops and bands is reported as fairly active, and a number of consumers whose contracts expired on June 30, but on which all the material was not taken out, have had these extended into third quarter, while in some cases new contracts have been made. We quote steel hoops for forward delivery at 1.50c. to 1.55c. and steel bands at 1.45c. to 1.50c., f.o.b. Pittsburgh, extras as per the steel bar card applying on the latter.

Spikes.—No large contracts for railroad spikes have been placed with the local mills for some time, new demand being largely confined to small lots for repair work. For small railroad and boat spikes the demand is more active than for standard sizes, and the makers are entering a fair amount of new business. We quote standard sizes of railroad spikes, 4½ x 9-16 in. and larger, at 1.55c. to 1.60c. for Western shipment and 1.60c. to 1.65c. for local trade. Boat and small railroad spikes are lower in price and we quote these at 1.65c. to 1.70c., base, these prices being for carload and larger lots.

Rivets.—New demand is fairly active, and so far this month orders placed are better than in the last half of June. Official prices on structural rivets are 2.15c. and on boiler rivets 2.25c., f.o.b. Pittsburgh, but for desirable orders these prices are being shaded.

Shafting.—Automobile builders continue to specify liberally on contracts for shafting. The general trade is placing fair orders, but the makers are not quite as busy as they were some time ago and have been able to catch up to some extent on back orders. Prices are fairly strong, but in exceptional cases for desirable orders are shaded. Regular discounts on shafting are 55 per cent. off in carload and larger lots and 50 per cent. off in small lots, delivered in base territory. For desirable specifications the carload price of 55 per cent. off is sometimes shaded to the extent of about 55 and 5 off.

Wire Products.—There has been no improvement in conditions in the wire trade other than noted in this report for some weeks. The new demand for wire nails and wire products generally is light and is confined to small lots to cover actual needs. The Southern wire trade usually opens up in the early part of August, and it is believed that within the next month orders for wire products will show an increase. The Pittsburgh Steel Company has started up its open hearth steel plant, rod and wire mills at Monessen, Pa., and the American Steel & Wire Company has also started several of its works which closed down about June 30 for inventory and repairs. Reports are current of $1.75 being quoted on wire nails, but while this is being done it is only in exceptional cases and by one or two of the smaller outside mills that are anxious for orders. The two leading companies in the wire trade, the Pittsburgh Steel Company and American Steel & Wire Company, are still quoting on the basis of $1.80 for carload and larger lots of wire nails. We quote galvanized barb wire, $2.10; painted, $1.80; annealed fence wire, $1.60; galvanized, $1.90; cut nails, $1.70 to $1.75, all f.o.b. cars, Pittsburgh, with usual terms, and freight to destination added.

Merchant Pipe.—There has been considerable activity in the large pipe trade in the past week. The National Tube Company has taken a contract for 100 miles of 8-in., to be furnished to the Texas Company, and the same interest has taken 90 miles of 12-in. for a gas line to convey natural gas into London, Ontario, Canada. The La Belle Iron Works, Steubenville, Ohio, has also taken a contract for 100 miles of 6-in. for the Texas Company. Reports are current of some very large contracts for line pipe being placed in California to convey crude oil for fuel purposes from the California oil fields into Arizona and New Mexico, but official confirmation of the placing of these contracts is lacking. The general demand for merchant pipe is only fair, but on the larger sizes the leading mills are pretty well filled up for the balance of this year. It is stated that official discounts on steel and iron pipe, in the main, are being observed.

Boiler Tubes.—Additional contracts for locomotive tubes have recently been placed with local mills. The new demand for boiler tubes is fairly heavy, and the mills are pretty well filled up for the next several months. Official discounts on locomotive and boiler tubes, printed on another page, are still being more or less shaded.

Coke.—There has been some pretty heavy buying of foundry coke for delivery over the last half of the year, and several inquiries are in the market for furnace coke for the same delivery. One local interest has recently taken three or four nice contracts for foundry coke on the basis of $2.40 to $2.50 per net ton at oven, for delivery over balance of this year. The coke made by this concern has a high reputation in the trade and always demands the highest prices. The inquiry for the Westinghouse Electric & Mfg. Company for about 12,000 tons of foundry coke for last half of the year has not yet been closed. We quote best grades of furnace coke running under 1 per cent. in sulphur for delivery over last half of the year at $1.80 to $1.85, and best grades of 72-hour foundry coke at $2.15 up to $2.40 per net ton at oven for same delivery. Furnace coke loaded on cars which has to be moved is being offered at $1.65 to $1.70 for best grades.

Iron and Steel Scrap.—The market has been exceedingly quiet in the past week, and not much betterment is expected until next month, as by that time the plants that are now closed for inventory and repairs will probably have started up again. The Pittsburgh Steel Company, the leading consumer of heavy steel scrap in this district, started up its open hearth steel plant at Monessen, Pa., last week and is again taking in old material. Dealers believe that prices of scrap have about touched bottom, and there is not as much pressure to sell as there was two or three weeks ago. Dealers quote about as follows, per gross ton, for delivery at Pittsburgh or elsewhere as noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$14.50 to $14.75
No. 1 foundry cast	14.25 to 14.50
No. 2 foundry cast	13.25 to 13.50
Bundled sheet scrap, at point of shipment	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	16.00 to 16.25
No. 1 railroad malleable scrap	14.00 to 14.25
Grate bars	11.00 to 11.25
Low phosphorus melting stock	18.00 to 18.50
Iron car axles	25.00 to 25.25
Steel car axles	21.00 to 21.25
Locomotive axles	26.00 to 26.25
No. 1 busheling scrap	13.00 to 13.25
No. 2 busheling scrap	9.00 to 9.25
Old car wheels	14.50 to 14.75
Sheet bar crop ends, shipping point	16.75 to 17.00
Cast iron borings	8.00 to 8.25
Machine shop turnings	9.50 to 9.75

Chicago

FISHER BUILDING, July 13, 1910.—(*By Telegraph.*)

Nothing has developed in the past week to materially change the complexion of the market. Pig iron is holding its own at the levels previously reported, and there is no more willingness to sell than is manifested to buy, as it is not believed that there will be any appreciable change in the situation for the next few weeks. Melters as well as furnace interests are inclined to let the market drag, content to watch and wait for the development that will indicate that bottom has been reached. Agricultural consumption of rolled products is pre-eminently the bright feature of the market, and there seems no cessation in the movement of material to these channels. The frequent showers in the Northwest this week further tend to brighten this situation. July has not started well for fabricated material, but June was a good month, the contracts closed in that period aggregating 187,000 tons. Prices, however, remain low. In the failure of the Amalgamated Association to reach an agreement with the Western Bar Iron Association at the recent scale conference, bar iron has strengthened sentimentally. Plate, structural and rail mills are running comfortably, but in no instance are they crowded with specifications. The axle mill and 12-in. bar mill at Gary are reported near completion, and both will be started up within the next 30 to 60 days. Scrap is without any life and values have receded this week under the pressure of heavy railroad offerings. The Wisconsin Steel Company has blown out its No. 2 furnace.

Pig Iron.—Possibly the most important development of the week is the reduction in the price of a Virginia brand of iron. This product had been held on the basis of $14.25,

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Roanoke, for No. 2, which is equivalent to $13.10, Birmingham, or $17.35, Chicago. Under the conditions that have been prevailing in the iron market the company has been unsuccessful in marketing its product at this level, and has announced a cut of 75c. a ton, or to the basis of $12.35, Birmingham, for No. 2 for third quarter delivery. Very little interest is manifested in the market, however. Reports here mention that Birmingham irons have been sold as low as $11.25 for prompt shipment, but they cannot be verified. The lowest price offered in this market is $11.50 for No. 2. The loading interests aver they are holding out for $12, but are doing no business at this figure. Inquiry for iron is light, and there is such a contest to secure the business offered that frequently the buyer becomes wary and withdraws for a better price. There was a sale last week of 1500 tons of malleable Bessemer and 500 tons of foundry for last half delivery at the "going market price," to quote the seller. This may mean anything from $16.50, at furnace, down. Another malleable interest has also come into the market for last half requirements, about 1800 tons, and there are scattering inquiries for 6000 tons of foundry irons. There is no fixed price for Northern brands. It ranges from $16.25 to $16.50 for No. 2 at the furnace, and each transaction is a law unto itself. Charcoal irons are firm, and the quotations below represent the minimum spread. The following quotations are for July, August and September shipment, Chicago delivery:

Lake Superior charcoal	$18.50 to $19.00
Northern coke foundry, No. 1	17.00 to 17.50
Northern coke foundry, No. 2	16.50 to 17.00
Northern coke foundry, No. 3	16.25 to 16.50
Northern Scotch, No. 1	17.50 to 18.00
Southern coke, No. 1	16.35 to 16.85
Southern coke, No. 2	15.85 to 16.35
Southern coke, No. 3	15.60 to 16.10
Southern coke, No. 4	15.35 to 15.85
Southern coke, No. 1 soft	16.35 to 16.85
Southern coke, No. 2 soft	15.85 to 16.35
Southern gray forge	15.10 to 15.60
Southern mottled	14.85 to 15.35
Malleable Bessemer	16.50 to 17.00
Standard Bessemer	18.40 to 18.90
Jackson Co. and Kentucky silvery, 6%	19.40 to 19.90
Jackson Co. and Kentucky silvery, 8%	20.40 to 20.90
Jackson Co. and Kentucky silvery, 10%	21.40 to 21.90

(*By Mail.*)

Billets.—Inquiries for 20,000 tons of Bessemer billets were made this week, one consumer wanting 10,000 tons but it was impossible to place the business in this market. No sales of open hearth or forging billets are reported, although specifications against existing contracts are to full contract quotas. In the absence of any transactions, Pittsburgh quotations continue to govern.

Rails and Track Supplies.—There were no sales of standard sections this week, and only a few scattering inquiries for light rails. The South Chicago and Gary mills are comfortably fixed as to specifications, but neither plant is running to its full capacity. We quote standard railroad spikes at 1.75c. to 1.85c., base; track bolts with square nuts, 2.40c. to 2.50c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $27; 30 to 35 lb., $27.50; 16, 20 and 25 lb., $28; 12 lb., $29, Chicago.

Structural Material.—The low price at which fabricated material is being offered is bringing out a considerable volume of business. Quotations to-day range from $44 to $46 a ton. Last January the price was around $50 a ton. Only a small proportion of the business figured upon is placed, however, as the competition and disparity in prices create the belief that a better figure can be obtained by waiting. The contracts taken by the American Bridge Company during June aggregated 75,000 tons and those placed with its competitors 112,000 tons, a total of 187,000 tons for the month—a very healthy evidence that building operations are not hampered by any lack of capital or fear of the future. Contracts let in the West last week include 160 tons for a power house for the South Side Light & Power Company of San Francisco, which went to the Pacific Rolling Mill Company of that city; 820 tons of bridge material awarded to the American Bridge Company by the East St. Louis, Columbia & Waterloo Railroad; 708 tons for the Memphis union station, let to the Richards-Noelke Iron Works, Indianapolis, Ind. The only new large job that has come up for figures this week is the building for the Dime Savings Bank of Detroit, 4000 tons, bids for which are being taken by D. H. Burnham & Co. of this city. We quote plain material from mill, 1.63c. to 1.68c., Chicago; from store, 1.90c. to 2c., Chicago.

Plates.—The most noteworthy feature this week was the receipt of specifications for 7000 to 8000 tons of material for steel car construction. New tonnage is light and specifications from the general trade are only fairly good. The South Chicago mills are operating between 75 and 80 per cent. of their capacity. We quote mill prices at 1.63c. to 1.68c., Chicago; store prices, 1.90c. to 2c., Chicago.

Sheets.—The Western market continues quite erratic. Competition is keen for the business offered and prices easily respond to pressure. The increasing cost and slow delivery of sheet bars are gradually eliminating the low sellers in this market, and there is a belief that by the first or middle of August conditions will be more normal. Trade is opening up well in the Southwest, from which point there is an especially good demand for galvanized and corrugated sheets. Specifications from the electrical and agricultural trades are also reported good. Inquiries from jobbers throughout the various sections of the West indicate that these interests are beginning to feel the need of replenishing their warehouse stocks. The Inland Steel Company started up its plant at Indiana Harbor last Monday after a week's shutdown over the holiday for repairs. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 3c. to 3.10c.; No. 28 galvanized, 4c. to 4.10c.

Bars.—Specifications for soft steel bars are extraordinarily heavy. The best delivery that can be made is six weeks to two months, despite the fact that all the mills are running to their fullest capacity. Some relief from this congestion is expected when the new 12-in. mill at Gary is started up, which is now expected to be September 1. Bar iron is in fair demand, though prices continue somewhat erratic. Railroad and car business is slow, but the specifications from jobbers, which are very liberal, more than make up for this discrepancy. The Interstate mill at East Chicago resumed operations last Monday after a week's idleness, but the three Western mills of the Republic are still down. No agreement was reached at the Detroit conference between the representatives of the Amalgamated Association and the Western Bar Iron Association a couple of weeks ago, and another conference will likely be held the third or fourth week of this month. Pending the settlement of the disputed questions, the Western mills will continue in operation through July on the old scale, except those of the Republic Iron & Steel Company, and these mills will not start up until the new schedule has been settled and signed. There is a good business in hard steel bars, due to active building operations, and prices are very firm. Subject to the usual delay in delivery of soft steel bars, we quote as follows: Soft steel bars, 1.63c. to 1.68c.; bar iron, 1.40c. to 1.45c.; hard steel bars rolled from old rails, 1.50c. to 1.60c., all Chicago.

Rods and Wire.—The most optimistic feature of the present situation in the minds of producers is the low stocks of all forms of wire products reported from all sections of the country. Despite the fact that July is ordinarily a dull month, many jobbers have found it necessary to send in requisitions for immediate shipment. This is considered the hopeful feature of the situation, and with the early return to traveling men to their territory a sharp improvement in buying is looked for. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.78c.; wire nails, 1.98c.; painted barb wire, 1.98c.; galvanized, 2.28c., all Chicago.

Merchant Steel.—In anticipation of an active season, the implement manufacturers are placing specifications for fall shipments quite freely. There has also been a good run of new business in the week under review as a result of shortages disclosed in the process of taking inventory. Mills are slowly overtaking their delinquent deliveries, but are advising their customers to specify freely and early to assure the delivery of the material at the proper time.

Cast Iron Pipe.—There were several municipal lettings last week ranging from carload lots to 400 tons, the latter being placed by the city of Essexville, Mich., and awarded to the leading interest. Several desirable specifications were received from gas interests, aggregating 1000 tons. Cheyenne, Wyo., is in the market for 3000 tons, which will be closed within a week or 10 days. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $28; 6 to 12 in., $27; 16-in. and up, $26, with $1 extra for gas pipe.

Old Material.—The Western market might be summed up briefly in the statement that apathy prevails. It is even hard to dispose of bargain lots and many of these have gone begging this week. The mid-summer shut down was more extensive among bar mills in this section this year and the period of idleness was longer than usual, resulting in an accumulation of scrap which has practically put these interests out of the market for the immediate future. Furthermore, there are very extensive offerings by railroads, four new lists having come out this week, of an aggregate of 13,000 tons divided as follows: Illinois Central, 6000 tons, St. Paul, 3000 tons, Santa Fe, 2000 tons and the Soo Line 2000 tons. The Baltimore & Ohio and the Burlington both disposed of large lists last week, further glutting the market. These large offerings, combined with the large stocks in the hands of consumers and country merchants have created a feeling of fullness and apprehension hard to overcome. The big dealers are not inclined to speculate on the

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situation and contrary to their usual custom at this time of the year are not buying for storage. With the exception of stove plate and heavy cast the entire scrap list is weak. A local implement manufacturer paid $11 last week for 200 tons of stove plate, and heavy cast is easy to dispose of at $13. Both these materials are scarce. There is no market here either for borings or turnings and it is also well nigh impossible to dispose of either railroad or agricultural malleable at prevailing prices. The Illinois Central and Santa Fe lists will be sold this week and it is believed that some new low prices will be established at that time. The Illinois Central list includes 1000 tons of railroad wrought and 1000 tons of car wheels and the prices offered thus far for these materials are below the quotations that have been current. Market conditions are such that dealers do not show any confidence in the future and the belief of the majority is that prices will be lower before there is any recovery either sentimentally or otherwise. Following prices are per gross ton, delivered, Chicago:

Old iron rails	$16.75 to $17.25
Old steel rails, rerolling	16.00 to 16.50
Old steel rails, less than 3 ft	13.00 to 13.50
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	14.75 to 15.25
Heavy melting steel scrap	12.25 to 12.75
Frogs, switches and guards, cut apart	12.25 to 12.75
Shoveling steel	11.75 to 12.25

The following quotations are per net ton:

Iron angles and splice bars	$14.50 to $15.00
Iron car axles	19.50 to 20.00
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	11.50 to 12.00
Springs, knuckles and couplers	11.50 to 12.00
Locomotive tires, smooth	17.00 to 17.50
No. 1 dealers' forge	11.00 to 11.50
Steel axle turnings	9.00 to 9.50
Machine shop turnings	7.50 to 8.00
Cast and mixed borings	4.50 to 5.00
No. 1 busheling	10.50 to 11.00
No. 2 busheling	8.00 to 8.50
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
No. 1 cast scrap	13.00 to 13.50
Stove plate and light cast scrap	11.00 to 11.50
Railroad malleable	11.25 to 11.50
Agricultural malleable	10.75 to 11.00
Pipes and flues	9.50 to 10.00

Philadelphia

PHILADELPHIA, PA., July 12, 1910.

The usual midsummer characteristics are to be noted in both the crude and finished material markets. Buying continues irregular and there is an absence of snap in the demand. Sellers make no effort to force business, while buyers are holding back with an expectancy that they will in the near future be able to purchase at a trifle lower prices. Weak sellers continue to take business at inside figures, although there are still a number of producers who will not meet the low figures named. The heated term has also had a retarding effect on business, as well as the production at the mills, which have in a number of cases resumed operations after the usual midyear suspensions. The demand for heavy plates has been a trifle better, but prices are not strong; less business has been going in structural material, while the other lines of finished material show but little movement. A shade more business is reported in old material, but sales are principally in small lots and between dealers. Coke is quieter, with prices a little firmer.

Pig Iron.—The market has a tendency to drag. While occasional inquiries come out for foundry grades, business is not placed freely, and when any material quantity is involved there is usually pretty sharp competition for the business, as some makers in this, as well as adjoining districts, are quite anxious to get orders on their books. There has, however, been very little large lot buying for general foundry use in this territory, although one inquiry for 4000 tons, covering various higher grades of foundry iron for last quarter and first half delivery, is before the trade. The major portion of the recent transactions has been of a small lot character at prices ranging from $16.25 to $16.50, delivered, for standard brands of No. 2 X foundry, with an occasional small or special sale at the $16.75, delivered, price. The differential between No. 2 X and No. 2 plain grades is not over 25c. a ton, and some makers have entirely eliminated it, quoting the same price for either No. 2 X or No. 2 plain iron. Prices, however, do not show as wide a range as they recently have, inasmuch as those who have been holding at a high level are in some instances receding from their position and meeting the market more generally. The cast iron pipe foundries have been somewhat more active buyers, one Delaware River foundry having purchased several thousand tons of low grade iron, while another is in the market for 5000 to 6000 tons, for which they expect to close in a few days. Southern makers are figuring quite extensively on this business, although Northern off-grade iron is also being offered. The movement in Virginia foundry irons has not been particularly active, and, while some makers still name $14, furnace, for small lots of No. 2 X, this grade can be readily had at $13.75, furnace, although the majority of producers will not sell for delivery extending over the full second half. The range of prices for delivery in this territory now more closely approximates $16.50 to $16.75, although occasional sales at $17, delivered, are reported, with some makers quoting the same price for either No. 2 X and No. 2 plain grades. The demand for forge iron for rolling mill purposes is light; a few sales have been reported at $15.50, delivered, in this territory. Basic iron has been quiet, and several sellers have canvassed the trade thoroughly recently without finding a buyer. Moderate sales of standard low phosphorus iron are reported for delivery over the last half of the year; prices are a trifle easier, $22.50 to $23 representing the market for standard brands. The presence of weak sellers gives the market an uncertain tone, as sales at low prices are usually kept pretty well covered. The following range, however, represents open quotations for standard brands delivered in buyers' yards in this vicinity:

Eastern Pennsylvania, No. 2 X foundry	$16.25 to $16.50
Eastern Pennsylvania, No. 2 plain	16.00 to 16.25
Virginia, No. 2 X foundry	16.50 to 16.75
Virginia, No. 2 plain	16.25 to 16.50
Gray forge	15.50
Basic	15.75
Standard low phosphorus	22.50 to 23.00

Ferromanganese.—No demand is reported from consumers in this territory and prices are nominal, at $39.50 to $40, Baltimore, for last half delivery.

Billets.—There is a noticeable absence of demand for open hearth rolling billets, although some contracts for forging billets for second half delivery have been made on a $31 to $32, Eastern mill, basis. Small sales of rolling billets from stock are reported at $28.50 to $29, delivered in this territory, although odd lots can frequently be had at a concession from those prices.

Plates.—While Eastern mills receive a very fair volume of general business, that from customers in this territory has not been very heavy. Some more extensive business, however, is being figured on, one inquiry for some 6000 tons of tank and gas holder plates, and another of 1000 tons for bridge work, being among them. Current business is, however, rather of a miscellaneous character, on which open quotations of 1.60c. to 1.65c., delivered in this territory, are named, although there are rumors of concessions, particularly on the part of Western mills.

Structural Material.—Business is reported as being somewhat lighter. A number of fair propositions are being figured on, few, however, being in this immediate vicinity. Some of the mills are showing more anxiety to book orders, but the weak tendency of prices has a tendency to hold back orders. For ordinary plain shapes, delivered in buyers' yards in this vicinity, 1.60c. can be freely done.

Sheets.—Mills have to a large extent resumed work after the usual midyear shut down, and have as a rule a larger volume of business on their books, a good share of which accumulated while mills were idle. The market in this district has a somewhat stronger appearance, with prices comparatively firm at the following range: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

Bars.—Very little business is being offered and trade drags perceptibly. A number of the mills are still idle, and some may not resume operations until they have a fair tonnage of orders on the books. Prices are unchanged, refined iron bars being quoted at 1.47½c. to 1.55c., delivered, in this territory. Steel bars are firm at 1.60c., delivered.

Coke.—With the closing of a number of contracts for second half foundry coke, activity in the market became somewhat quieter. Prices also showed a stiffening tendency, particularly on the part of makers in the Connellsville field. Very little business is offered in furnace coke. Prices generally show no change, but have a stronger tone, the following range being named, per net ton, for deliveries in buyers' yards in this vicinity:

Connellsville furnace coke	$4.00 to $4.15
Foundry coke	4.50 to 4.75
Mountain furnace coke	3.60 to 3.75
Foundry coke	4.10 to 4.35

Old Material.—Outside of some fair sales of low phosphorus scrap, aggregating about 3000 tons, transactions in old material have been small and confined principally to transactions between dealers. The associated steel and rolling mills are taking on very little material, pending the awards against the various railroad lists. A sale of several hundred tons of car wheels is reported, but the market on the whole continues quiet, and prices, owing to insufficient sales in many grades to establish a market, are largely

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nominal, ranging however, about as follows for delivery in buyers' yards in this territory:

No. 1 steel scrap and crops	$14.25 to $14.50
Old steel rails, rerolling	16.00 to 16.50
Low phosphorus	19.25 to 19.75
Old steel axles	20.50 to 21.00
Old iron axles	26.50 to 27.50
Old iron rails	19.00 to 19.50
Old car wheels	14.50 to 15.50
No. 1 railroad wrought	16.00 to 16.50
Wrought iron pipe	14.00 to 14.50
No. 1 forge fire	12.50 to 13.00
No. 2 light iron	7.50 to 8.50
Wrought turnings	9.75 to 10.25
Cast borings	9.50 to 9.75
Machinery cast	15.00 to 15.50
Railroad malleable	14.00 to 14.50
Grate bars	12.25 to 12.75
Stove plate	10.00 to 10.50

Cincinnati

CINCINNATI, OHIO, July 13, 1910.—(*By Telegraph.*)

Pig Iron.—An inquiry has just come out from a local consumer for 8000 to 8500 tons of steel making iron, basic and Bessemer. While this has excited some interest locally, no price cutting contest is anticipated, as figures seem to have gone about as low as the furnaces can stand. The central Ohio interest, mentioned last week, is understood to have placed an order for 1200 tons of Southern iron, and the balance of its requirements will be filled with Northern iron, not yet contracted for. A local firm has received a report from the Birmingham district showing that out of 40 active furnaces only 20 are now in blast. This has not stiffened prices as anticipated, and $11.50, Birmingham, for No. 2 seems the prevailing figure. Northern irons are listless, and we quote $15 to $15.50, furnace. Malleable is firm at $15.50. The smaller interests are buying sparingly. For immediate delivery and through the last half, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$15.25 to $15.75
Southern coke, No. 2 foundry	14.75 to 15.25
Southern coke, No. 3 foundry	14.25 to 14.50
Southern coke, No. 4 foundry	14.00 to 14.25
Southern coke, No. 1 soft	15.25 to 15.75
Southern coke, No. 2 soft	14.75 to 15.25
Southern gray forge	14.00 to 14.25
Ohio silvery, 8 per cent. silicon	19.20
Lake Superior coke, No. 1	16.70
Lake Superior coke, No. 2	16.20
Lake Superior coke, No. 3	15.70
Standard Southern car wheel	25.25 to 25.75
Lake Superior car wheel	22.25 to 22.75

(*By Mail.*)

Coke.—Foundry coke has a better tone this week, and prices are firmer. This is brought about for the reason that July is the contracting month for the foundry interests, and a number of contracts have been made during the past few days, some for a six months' supply, but the majority for the entire 12 months. Furnace coke is quoted around $1.70 to $1.75 per net ton, at oven, for prompt delivery, with a 5c. advance for second half shipment. The contract price for Pocahontas furnace grades hangs around $1.85, with slight concessions for prompt delivery. Connellsville foundry coke is firm, at $2.25 to $2.50, on contract, and Pocahontas foundry at $2.20 to $2.25. A fair quotation for Wise County foundry coke would be from $2.10 to $2.25.

Finished Iron and Steel.—Business continues good, with no sign of a let-up in the near future. The large amount of building going on makes an excellent market for reinforcing concrete bars. Structural material of all kinds is in fair demand. Beams and channels, out of stock, can be bought around 1.90c. The demand for iron bars is not strong and they are quoted around 1.50c., Cincinnati, mill delivery. Hoops and bands are holding their own.

Old Material.—The market is dull and very little material of any kind is moving. Railroad offerings for the past few days have been light. Prices for delivery in buyers' yards, Cincinnati and southern Ohio, are as follows:

No. 1 railroad wrought, net ton	$11.50 to $12.00
Cast borings, net ton	4.00 to 5.00
Steel turnings, net ton	6.00 to 7.00
No. 1 cast scrap, net ton	11.00 to 12.00
Burnt scrap, net ton	8.00 to 9.00
Old iron axles, net ton	16.50 to 17.00
Old iron rails, gross ton	17.00 to 17.50
Old steel rails, short, gross tons	14.50 to 15.50
Old steel rails, long, gross ton	14.50 to 15.50
Relaying rails, 56 lb. and up, gross ton	22.00 to 23.00
Old car wheels, gross ton	12.00 to 13.00
Low phosphorus scrap, gross ton	16.00 to 16.50
Heavy melting steel scrap, gross ton	11.50 to 12.00

Cleveland

CLEVELAND, OHIO, July 12, 1910.

Iron Ore.—Shipments appear to have slowed down slightly since the first of the month. A considerable falling off is expected later in the season. Some of the merchant furnace companies that were unwilling to take their ore earlier in the season are now accepting shipments. No sales have been made for some time. In spite of the fact that 20 per cent. of the independent vessel capacity has been taken out of commission, there are not enough cargoes to supply all the boats now in operation. We quote prices as follows, per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The market is quieter than for several weeks. Inquiries of any size are lacking and the only sales reported are a few small lots. A number of northern Ohio foundries that have had inquiries out during the past few weeks have decided not to buy for the present. Some of these are buying spot iron as they need it. Quotations remain about stationary, but not enough business is coming out to test the market. Owing to the light demand some stock piles are growing more rapidly than they did in June. Some of the producers are not trying to meet present prices. No. 2 foundry is quoted at $14.25 to $14.50, Valley furnace. There is some inquiry for small lots of high silicon iron. Ohio silvery, 8 per cent. silicon, is held at $18 for the fourth quarter, but this price is being shaded 25c. to 30c. for the third quarter delivery, and $18.50 is being asked for the first half of next year. There is little inquiry for Southern iron. The only sale reported is 500 tons of No. 2 to a central Ohio stove maker at $11.50, Birmingham, which appears to be the present market basis. For prompt shipment and last half we quote, delivered, Cleveland, as follows:

Bessemer	$16.40 to $16.65
Northern foundry, No. 1	15.65 to 15.90
Northern foundry, No. 2	15.15 to 15.40
Northern foundry, No. 3	14.65 to 14.90
Gray forge	14.65 to 14.90
Southern foundry, No. 2	15.85
Jackson Co. silvery, 8 per cent. silicon	19.25 to 19.50

Coke.—Some foundry coke contracts are being placed at $2.25 for the last half, the same price being quoted for the same grades for delivery through an entire year. No transactions are reported in furnace coke. We quote standard Connellsville furnace coke at $1.60 to $1.70 per net ton, at oven, for spot shipment and $1.80 to $1.85 for the last half. Connellsville 72-hour foundry coke is held at $2.15 to $2.25 for spot shipment and $2.25 to $2.50 for the last half.

Finished Iron and Steel.—The market is generally quiet, although some of the mills report a fair demand for small lots of material. Rumors that the price of steel bars is being shaded have gained considerable circulation and have caused some uneasiness among the sellers. It appears that one interest has quoted a price of 1.40c., Pittsburgh, to two or three agricultural implement makers in this territory, but so far other mills are holding firmly to the 1.45c. price, and the opinion prevails that the latter price will be generally maintained. The demand for structural material is only moderate. Fabricating shops are not well filled and are quoting low prices. Contracts have not yet been placed for the plain material for considerable tonnage required for construction work recently let in this city. Buyers seem to be holding off for price concessions. Small lots are still being sold at 1.45c. to 1.50c., Pittsburgh. The contract for an addition to the plant of the Lima Locomotive & Machine Company, Lima, Ohio, has been let to the Massillon Bridge & Structural Company. It will require about 600 tons. There is a fair demand for small lots of plates. Prices are not firm, the 1.40c., Pittsburgh, quotation having become more general. Some mills are still holding to 1.45c., and are getting 1.50c. for small lots. The demand for sheets continues light, with concessions as high as $3 a ton on black and $4 on galvanized. Prices on blue annealed sheets remain firm. The demand for shafting continues good and prices are being maintained. The demand for iron bars is light. Price quotations remain stationary at 1.40c. to 1.45c., at mill. It is expected that the two local bar iron mills will be kept shut down until August 1. The demand for rivets has fallen off somewhat, orders being for smaller tonnages. Regular quotations on rivets are being shaded from $1 to $3 a ton. While the demand on warehouses is less active than a few weeks ago, jobbers report a fair volume of stock orders.

Old Material.—The market continues very dull. Very few orders are being taken and mills generally are holding back shipments on contracts. Some mills that have taken no scrap for the past two weeks because of being shut down will accept shipments again after July 15. Prices are weak and largely nominal. A further reduction of 50c. a ton is made in several grades. Railroad offerings this week

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include lists from the Pennsylvania Lines East and the Norfolk & Western. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$14.50 to $15.00
Old iron rails	16.50 to 17.00
Steel car axles	20.50 to 21.00
Heavy melting steel	13.00 to 13.50
Old car wheels	14.00 to 14.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	12.00 to 12.50
Railroad malleable	13.00 to 13.50
Light bundled sheet scrap	9.00 to 9.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.50 to $22.00
Cast borings	6.00 to 6.50
Iron and steel turnings and drillings	7.00 to 7.50
Steel axle turnings	9.00 to 9.50
No. 1 busheling	12.00 to 12.50
No. 1 railroad wrought	14.00 to 14.50
No. 1 cast	12.50 to 13.00
Stove plate	11.00 to 11.50
Bundled tin scrap	11.00 to 11.50

Birmingham

BIRMINGHAM, ALA., July 11, 1910.

Pig Iron.—There has been a further curtailment in production the past week by the blowing out of two stacks. The putting out of another is receiving serious consideration, and in all probability it will be done this week. Several small inquiries that have been pending were closed last week, aggregating 3000 or 4000 tons. There is still a feeling of unrest all round, but sellers refuse to be hammered lower than $11.50, at the furnace. This is the lowest price that has been heard of. There is no doubt that pig iron has been sold rather freely during the past three weeks at $11.50; in fact, two or three of our largest producers, it is understood, have put about as much tonnage on their books at these low figures as they care for. It is also a fact that some companies are still quoting $12 for third and fourth quarter delivery. One or two large inquiries that were heard of last week and the week before seem to have dropped out of the market for some cause. In all probability they were submissions and the prices named did not favorably impress sellers, so no trade was closed. As yet none of the Southern producing interests has been willing to open its books for delivery beyond December 31, 1910. It is understood that very few requests have been made for such deliveries thus far. It is thought that with the material curtailment in production since the early part of the year—and especially recently—it will not take long for the furnace companies to work off what surplus iron they have on hand; it may take two or three months to draw in the slack and be ready for a new start.

Cast Iron Pipe.—No important lettings are recorded, about the best feature of the market being the satisfactory small business being booked. These transactions are in keeping with pig iron conditions. There has been a somewhat better demand for gas pipe on account of recent activities along that line in the Middle and Far West. Prices are holding about the same. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12-in., average $21, with $1 per ton extra for gas pipe.

Old Material.—Several plants of the largest users of scrap are closed down at this time on account of inventory and the usual midsummer wage adjustments, and for this reason the scrap market is even duller than it has been. There is not much hope for any material change until pig iron becomes more active. Little interest is manifested either by buyers or sellers, and prices quoted remain only nominal, as follows, per gross ton, f.o.b. cars here:

Old iron axles	$16.50 to $17.00
Old iron rails	12.50 to 13.00
Old steel axles	16.00 to 16.50
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	9.00 to 9.50
No. 1 country wrought	8.50 to 9.00
No. 2 country wrought	8.00 to 8.50
No. 1 machinery	10.00 to 10.50
No. 1 steel	9.00 to 9.50
Tram car wheels	9.50 to 10.00
Standard car wheels	11.00 to 11.50
Light cast and stove plate	7.00 to 7.50

St. Louis

ST. LOUIS, Mo., July 11, 1910.

While the leading sellers of pig iron report business very quiet, even more so than usual in the midsummer season, all the large mills, foundries and fabricators in this city and vicinity are busy. A fairly good demand for coke aids in confirming this statement. Building is active and the banks report a satisfactory condition financially. Though the heated term is on, thus far there has not been more than normal temperature and but little curtailment of manufacturing has been caused by the weather. Such suspension as has taken place is due merely to the customary accounting and repair work of the season. Dealers in old material anticipate a good demand to set in early in the fall.

Coke.—While the market is not very active, there is a quite steady demand for coke, with occasionally the closing of good sized tonnage. The large inquiry reported last week is still pending, the parties not being in urgent need and their ideas regarding price are below the market. Among the inquiries noted is one for 50 cars of Connellsville foundry, shipment over a year. The sale of 3000 tons of Connellsville foundry for shipment over a year was reported by one of the leading sales agencies. The market for Connellsville 72-hour foundry for contract is $2.25 per net ton, f.o.b. oven, for round lots. Smaller business for special brands is done at $2.50 for prompt delivery or short time contracts.

Pig Iron.—The early part of the past week found many parties away or just returning from holiday trips, consequently business was restricted to the closing days of the week and trade partook of a holiday character. In fact, with most offices it was very quiet, none of them reporting sales exceeding 500 tons with very little inquiry except for small lots. An inquiry for 2000 tons of Northern iron is still pending. Such business as is passing is mostly for Southern foundry, for shipment over the last half. While some agencies are holding No. 2 Southern foundry at $12 Birmingham, for either prompt or extended delivery, others are offering it at $11.50. Merchant sellers are bearish, looking for lower prices on account of heavy stocks and the capital required in carrying them. We quote No. 2 Southern foundry at $11.50 Birmingham, for any delivery prior to January, 1911, and Southern Ohio at $15, f.o.b. furnace.

Finished Iron and Steel.—The leading interest reports a rather light demand for standard rails; for light rails there is more inquiry than of late. Structural material is only in fairly good demand for miscellaneous stock. Local shops are busy, but not being large companies, the aggregate sales total but a moderate tonnage. There is some outside call however. Bars are in pretty good demand, the better inquiry being for steel. Prices for iron are weaker. Spikes and bolts continue active and for miscellaneous track material there is a steady demand.

Old Material.—The leading dealers report a very quiet market ruling throughout the past week, transactions being almost wholly confined to the regular trade. The St. Louis & San Francisco Railroad closed out 2500 tons of miscellaneous scrap, and the Wabash 800 tons. The tone of the market, in consequence of lack of demand from consumers, is weak, though no material decline in prices is looked for. We quote dealer's prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$15.00 to $15.50
Old steel rails, rerolling	13.50 to 14.00
Old steel rails, less than 3 ft	13.50 to 14.00
Relaying rails, standard sections, subject to inspection	25.00 to 25.50
Old car wheels	15.00 to 15.50
Heavy melting steel scrap	12.50 to 13.00
Frogs, switches and guards, cut apart	12.50 to 13.00

The following quotations are per net ton:

Iron fish plates	$14.00 to $14.50
Iron car axles	21.00 to 21.50
Steel car axles	20.00 to 20.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	12.50 to 13.00
Railway springs	11.50 to 12.00
Locomotive tires, smooth	16.50 to 17.00
No. 1 dealers' forge	11.00 to 11.50
Mixed borings	6.00 to 6.50
No. 1 busheling	11.00 to 11.50
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
No. 1 cast scrap	10.50 to 11.00
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	10.50 to 11.00
Agricultural malleable	10.00 to 10.50
Pipes and flues	9.50 to 10.00
Railroad sheet and tank scrap	8.50 to 9.00
Railroad grate bars	9.00 to 9.50
Machine shop turnings	8.50 to 9.00

Articles of incorporation for the Banner Automobile Company, organized by Russell E. Gardner, president of the Banner Buggy Company and one of the leading business men of the city, have been filed. The contemplated output of the manufacturing plant to be erected is 20,000 cars annually.

The American Welding & Automobile Repair Company, St. Louis, has been incorporated; capital stock $5000; incorporators, August W. Mewes, H. G. Donigan and Fred Essen.

The St. Louis Fire Door & Sheet Metal Works, St. Louis, has been incorporated; capital stock, $7500; incorporators, H. Wertheimer, Albert Nathan and Maurice Weil.

The St. Louis contractors have compromised with the sheet metal workers after more than a month's controversy on the wage question, fixing the rate at $4.80 per day.

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Buffalo

BUFFALO, N. Y., July 12, 1910.

Pig Iron.—The market is quiet, exhibiting signs of the usual mid-summer dullness, and the volume of business coming in during the week was comparatively small. A number of orders which, from the tenor of the previous week's inquiry were expected to develop promptly, have not yet materialized. One interest received orders for malleable aggregating 3000 tons, from New England points, stated to have been placed at the maximum price in the appended schedule. The majority of such orders as were placed, however, were at low figures, especially for foundry irons. Prices obtainable are not attractive to furnacemen as furnaces cannot profitably continue operation indefinitely at current prices in the face of the high cost of production now prevailing. One or two interests, however, are reported to have made reductions equivalent to 50 cents per ton from last week's schedule for No. 1 X and No. 2 X foundry and 25 cents per ton for No. 2 plain, No. 3 foundry and gray forge. A reflection of these reductions seems warranted in the current week's schedule. We quote accordingly, per gross ton, f.o.b. Buffalo, for last half delivery:

No. 1 X foundry	$15.00 to $15.50
No. 2 X foundry	14.75 to 15.25
No. 2 plain	14.75 to 15.00
No. 3 foundry	14.50 to 14.75
Gray forge	14.25 to 14.50
Malleable	15.00 to 15.75
Basic	15.25 to 15.75
Charcoal	19.00 to 19.50

Finished Iron and Steel.—Most of the leading interests report new business for finished products coming in in good volume, although one or two agencies state some slackening is apparent, attributable to the midsummer vacation season. Steel bar prices remain unchanged, at 1.45c., Pittsburgh. Specifications on steel bar contracts and for hoop material have been heavy. Inquiry has been good for black and galvanized sheets; also for plain shapes and plates. The Canadian export demand for bar and hoop material and plates is well sustained, and some large contracts for structural shapes are pending. In fabricated structural material the demand continues fairly active. Specifications are being prepared for a number of local structures on which bids will soon be called for. These include the Connesius College buildings, requiring a large tonnage; a new theatre building on William street, and a store and loft building on Main street for Allen E. Klopp. Contract for steel for the medical laboratory for the University of Buffalo was awarded to the H. C. Harrower Iron & Steel Company.

Old Material.—The market continues inactive, with no change in conditions as regards the demand from consumers. the mills still holding back on shipping orders. No improvement is in sight and dealers do not anticipate much change in the situation before the end of the summer. Prices are unchanged and largely nominal as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$13.25 to $13.50
Low phosphorus steel	18.00 to 18.50
No. 1 railroad wrought	16.00 to 16.25
No. 1 railroad and machinery cast scrap	14.50 to 14.75
Old steel axles	18.00 to 18.50
Old iron axles	22.50 to 23.00
Old car wheels	14.50 to 15.00
Railroad malleable	14.50 to 14.75
Boiler plate	11.75 to 12.25
Locomotive grate bars	11.50 to 12.00
Pipe	11.25 to 11.75
Wrought iron and soft steel turnings	6.50 to 7.00
Clean cast borings	5.50 to 6.00
No. 1 busheling scrap	12.25 to 12.50

The German Iron Market

BERLIN, July 1, 1910.

In the absence of any new or striking changes in the iron market situation, the chief interest of trade circles attaches to the pending negotiations looking toward the reorganization of the pig iron trade and to other questions of organization. The outlook for the creation of a big combination controlling pig iron production and prices, to which reference has previously been made, has greatly improved within a week. The Niederrheinische Hütte has at last come to terms with the movers for the reorganization of the trade, but only after they conceded to it a yearly allotment of 160,000 tons. This concern, after the extensive reconstruction and enlargement of its furnaces during the past few years, stood out stiffly for a big allotment and got it. The syndicate promoters will now proceed, it is understood, to reach an understanding with the big furnace company at Lübeck, which went into operation some two or three years ago, and with the East German Syndicate, including since several months ago the Krafft furnaces near Stettin. It is surmised, however, that they will encounter at Lübeck the same difficulty as with the Niederrheinische concern, since it also is projecting a considerable addition to its plant, including a third furnace for making special qualities of pig.

SOME SYNDICATES ENCOUNTER TROUBLES.

On the other hand, the efforts to organize the scrap and old iron trade, described in previous letters, appear not to be making satisfactory progress; the negotiations, it is said, have come to a standstill. That all is not easy sailing with the trade organizations in the iron industry is also evident from the fact that not less than three of them went to the wall yesterday. The combination controlling steel castings was not renewed because of the difficulties made by numerous outsiders. The boiler tube syndicate was declared dead yesterday, owing chiefly to the refusal of the Mannesmann Company at Duesseldorf to continue in it, and the gas pipe men also dissolved their combination. From today on there will be open competition in all these products. In this connection it may be mentioned, however, that three of the greatest iron companies of the Silesian District—the Oberschlesische Eisenbahnbedarf Company, the Huldschinsky Works and the Bismarck Hütte—have just entered into a contract arrangement for 10 years for the manufacture of seamless steel tubing upon the community-of-interest principle. Each mill will turn out certain sizes exclusively, and the whole business will be pooled among them.

Reports from the market agree in representing conditions as very quiet. There has been little or no change in the situation for some time, but the uncertainty regarding the American situation is making itself more distinctly felt in Germany than hitherto. Prices are apparently being adhered to pretty firmly, but there is a feeling among consumers, and particularly among dealers, that easier prices will have to be conceded by manufacturers later on. Hence buying is mostly confined to immediate requirements. Dealers in particular are said to be holding back with orders for the purpose of compelling the mills to give easier terms. This has gone on so long now that their stocks are believed to have run pretty low and that they will soon have to come forward with new orders.

New York

NEW YORK, July 13, 1910.

Pig Iron.—There is very little new business. Buyers are of two classes—those who want quick shipment and those who would buy for the last quarter or for delivery extending into 1911. The quick shipment iron is presumably to average with higher priced iron coming in on contracts, a procedure of which there is always a certain amount in a declining market, and at the expense of regular shipments on old contracts. Some iron, chiefly for the high silicon portion of the buyer's mixture, has been sold in this district for air brake work, probably 1500 to 2000 tons, and there has been some buying for Connecticut delivery. While all furnaces are not quoting lower prices, some have gone to new low figures the past week on early delivery iron. Virginia No. 2 has touched $13.50, at furnace, though $13.75 is the more common quotation. In eastern Pennsylvania the furnace companies are unwilling to make the usual differential between No. 2 X and No. 2 plain. Buffalo furnaces have been meeting competition from other districts in New England and have named $14.75 and somewhat lower at furnace. Pipe foundries are buying when attractive offers are made or when their low bids are accepted, some of this business in Southern iron being at $10.75 and $10.50, respectively, at Alabama furnace, for Nos. 3 and 4. We quote Northern foundry iron at tidewater as follows: No. 1, $16.50 to $17; No. 2 X, $16.25 to $16.50; No. 2 plain, $15.75 to $16.25. Southern iron is quoted at $16.25 to $16.75 for No. 1 and $15.75 to $16.25 for No. 2.

Cast Iron Pipe.—As the pipe required for the water extensions of the city of New York will be purchased by contractors under awards made July 6, the price has not been made public. No further lettings of importance are in sight in this immediate vicinity. Purchases for general requirements are light and not numerous. Trade is, therefore, exceptionally dull for this season. Carload lots of 6-in. are quoted at $24.50 to $25 per net ton, tidewater. These quotations would be shaded on large lots or on municipal lettings.

Finished Iron and Steel.—All lines continue rather quiet in this territory. The structural material demand is a shade better. The largest item in prospect in New York is the south section of the new main station of the Grand Central Terminal, for which bids have been asked on 10,000

THE IRON AND METAL MARKETS

tons. The McClintic-Marshall Construction Company has obtained the contract for 1300 tons for the New York Polyclinic Hospital. This company has also taken 12,500 tons for bridges and viaducts on the extension of the Western Maryland Railroad. Other important structural material contracts outside of New York are the Hamilton Bank Building, Chattanooga, Tenn., 1300 tons, awarded the Brown-Ketcham Iron Works; the Virginia Trust Company Building, Richmond, 700 tons, awarded the Virginia Bridge & Iron Company; 2000 tons for the Utah Copper Company, taken by the Minneapolis Steel & Machinery Company; the highway bridge at Oil City, Pa., over the Allegheny River, 1600 tons, to be fabricated by Rogers Bros.; 700 tons for the Memphis, Tenn., union station, given to the Noelke-Richards Iron Works; 600 tons for the Lima Locomotive & Machine Company, Lima, Ohio, awarded the Massillon Bridge & Structural Company; 500 tons for the Sloan Laboratory at Yale University, awarded the Eastern Steel Company, and a bridge at Cleveland for the Erie Railroad, 1000 tons, taken by the Pennsylvania Steel Company. The bids are in, but no decision has been reached on the 3600 tons for the Dime Savings Bank Building at Detroit, Mich. The steel bar mills are receiving good specifications on contracts, but are closing less new business with the result that deliveries are steadily improving, but the price remains firm. The prices of bolts are weaker, but the bar iron business generally is very good for the season. Plates are weak and on good contracts the price is being shaded, but generally for local business, which is mainly in small lots, nothing is being taken at less than the market quotations. In consideration of the weakness in plates the quotation is revised to 1.56c. as a minimum; otherwise prices are unchanged—plain structural material and plates, 1.61c. to 1.66c.; steel bars, 1.61c., and bar iron 1.50c. to 1.55c., all New York.

Steel Rails.—The Baltimore & Ohio has just added 1000 tons to its original rail order, this amount being divided between the Pittsburgh and Chicago district mills. An order for 950 tons has been placed by the Elizabethtown Terminal Railway Company with the Carnegie Steel Company.

Old Material.—The demand is light, consumers appearing almost uninterested in the old material market. The supply is large and buyers have acquired the habit of looking for bargains. Quotations per gross ton, New York and vicinity, are nominally as follows:

Rerolling rails	$12.25 to $12.75
Old girder and T rails for melting	11.50 to 12.00
Heavy melting steel scrap	11.50 to 12.00
Relaying rails	20.00 to 21.00
Standard hammered iron car axles	21.50 to 22.00
Old steel car axles	17.50 to 18.00
No. 1 railroad wrought	13.25 to 13.75
Wrought iron track scrap	11.50 to 12.00
No. 1 yard wrought, long	11.50 to 12.00
No. 1 yard wrought, short	11.00 to 11.50
Light iron	5.50 to 6.00
Cast borings	6.50 to 7.00
Wrought turnings	6.75 to 7.25
Wrought pipe	11.75 to 12.25
Old car wheels	12.00 to 12.50
No. 1 heavy cast, broken up	12.00 to 12.50
Stove plate	9.00 to 9.50
Locomotive grate bars	9.00 to 9.50
Malleable cast	12.00 to 12.50

Metal Market

NEW YORK, July 13, 1910.

THE WEEK'S PRICES

Cents Per Pound.

	Copper.			Lead.		Spelter.	
July.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
7	12.75	12.37½	32.75	4.40	4.25	5.20	5.05
8	12.62½	12.37½	32.60	4.40	4.25	5.20	5.05
9	12.62½	12.37½	....	4.40	4.25	5.20	5.05
11	12.62½	12.37½	{32.35 / 32.40}	4.40	4.25	5.20	5.05
12	12.62½	12.37½	32.45	4.40	4.25	5.20	5.05
13	12.62½	12.37½	32.65	4.40	4.25	5.20	5.05

The copper market is weak. Tin is selling below the cost of import. More interest is being taken in lead and some outside sellers are quoting advanced prices. The spelter market is quiet and uncertain.

Copper.—Notwithstanding the fact that the report of the Copper Producers' Association shows heavy exports, the figures on the whole were regarded as unsatisfactory by the trade. Notwithstanding the pessimistic sentiment, it is generally conceded that a great deal of copper is going into consumption, and under ordinary circumstances the extent of that movement would be considered good. As the matter stands, however, too much copper is being produced. The United Metals Selling Company has been trying to sell electrolytic copper this week at 12.37½c. A number of consumers were informed by the company Friday and Saturday that they could obtain copper at that price, but they did not seem particularly anxious to take it. Although consumers are carrying little stock, their attitude seems to be that the producers might just as well handle the surplus. It would be hard to say how low some holders of copper would sell electrolytic at this time, but they do not think it advisable to run the market down by reducing their quotations, especially when there seems to be no disposition to buy. Lake copper has weakened in price and there are offerings of round lots at 12.62½c. Casting copper is more plentiful and it can be had at 12.25c. In London to-day the market was firm. Spot copper sold for £54 and futures for £54 7s. The sales amounted to 700 tons of spot and 2500 tons of futures.

Waterbury Average.—The Waterbury average for June was 12.75c.

Pig Tin.—The pig tin market is dull and the metal is being sold at below the cost of import. There was a good buying movement on Monday, when about 200 tons was sold to consumers. The prices realized were 10 to 15 points below the import cost and the sales were made chiefly by people with London connections who, as a rule, do not care to do business below the London market price. In these cases, however, they were able to buy September tin as low as 32.25c., while they were selling export tin at from 32.35c. to 32.40c. Their purchases of September tin were made from people with speculative tendencies who seem to think the market will go down. It can be seen that the people who sold the spot tin, however, made from 10 to 15 points by their transactions. The arrivals of tin so far this month have been 1743 tons and there are 1949 tons afloat. Pig tin was sold in New York this afternoon for 32.65c. In London to-day spot tin sold for £148 12s. 6d. and futures for £149 15s. The sales were 90 tons of spot and 190 tons of futures. The market was firm.

Tin Plates.—The tin plate market continues firm and good business is being done. In some cases it is easier for buyers to obtain deliveries, especially from independent mills. The price in New York for 100-lb. coke plates is $3.84. There is a good sale for foreign tin plates, which are quoted at 13s. 4½d., at Swansea, Wales.

Lead.—There are indications that lead will advance shortly, and some outside sellers are even now asking 2½ points more than the price made by the American Smelting & Refining Company. That company is selling some good-sized quantities of the metal at 4.40c., New York, and some sales have been made at that price for shipment from Perth Amboy. Special brands of lead are being held at 4.42½c., while holders of the average brands are in some cases demanding that price. It can still be bought, however, at 4.25c., St. Louis, and 4.40c., New York, although it is hard to tell whether the market will remain long at those figures.

Spelter.—Consumers are taking little or no interest in spelter and prices are largely nominal. Considering the fact that consumers are not even feeling the market it is difficult to judge the exact conditions. Stocks are still very scarce in New York, and this city has ceased for the time to be a shipping point. Sellers are quoting the metal at 5.05c., St. Louis, which makes the price 5.20c., New York.

Antimony.—There are some good sized offerings of cheaper grades of antimony at all sorts of low prices, and the market is ragged. Cookson's is held at 8.38½c. and Hallett's at 8.12½c., but these prices are being cut in some cases.

Metals, Chicago, July 11.—The hot weather and the fact that many foundries have shut down in the last two weeks for inventory and other purposes have curtailed the sale of metals in this market. Copper is sluggish and prices are susceptible to pressure. A sharp break occurred in spelter. This product has been maintained on an artificial basis for some time, dealers holding out for higher prices. So little business was offered, however, that a reduction of $1 a ton was made last week. On the other hand, lead advanced $1 a ton, the interests which have been cutting this product having been eliminated, according to report. Old metals are quiet and melters are buying only such odd lots that appear in the light of bargains. We quote Chicago prices as follows: Casting copper, 12⅝c.; lake, 12⅞c. to 13c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 33½c.; small lots, 35c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.15c. to 5.20c.; Cookson's antimony, 10⅝c., and other grades, 9¾c. to 10¼c.; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12c.; copper bottoms, 10½c.; copper clips, 12¼c.; red brass, 11¼c.; yellow brass, 9¼c.; light brass, 6c.; lead pipe, 4¼c.; zinc, 4⅛c.; pewter, No. 1, 24c.; tin foil, 26c.; block tin pipe, 30c.

Metals, St. Louis, July 11.—Lead is firm at 4.25c. to 4.30c., East St. Louis. Spelter is weak at 5c., East St.

Louis. Zinc ore is held at $40 per ton, Joplin base. Tin is quoted at 33.05c. per lb.; antimony 8.60c.; Lake copper 13.05c.; electrolytic copper 12.75c., all St. Louis. The demand for finished metals was only fair and ruling as usual in midsummer.

Old Metals.—The market is weak, with a declining tendency. Dealers' selling prices, which are nominally unchanged, are as follows:

	Cents.
Copper, heavy cut and crucible	11.75 to 12.00
Copper, heavy and wire	11.25 to 11.75
Copper, light and bottoms	10.50 to 10.75
Brass, heavy	8.25 to 8.50
Brass, light	6.75 to 7.00
Heavy machine composition	11.00 to 11.25
Clean brass turnings	7.50 to 8.00
Composition turnings	9.25 to 9.50
Lead, heavy	4.05 to 4.20
Lead, tea	3.80 to 3.95
Zinc scrap	4.15 to 4.25

Iron and Industrial Stocks

NEW YORK, July 11, 1910.

The stock market has shown alternations of strength and weakness since our last report. This indicates that a feeling of uncertainty prevails with regard to the immediate future. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week has been as follows:

Allis-Chalm., pref.	30	Pressed St., com.	31 - 32
Beth. Steel, com.	23 - 24¼	Pressed St., pref.	96 - 96½
Beth. Steel, pref.	53	Railway Spr., com.	30¼ - 32½
Can, com.	7⅝ - 8¾	Railway Spr., pref.	100⅛
Can, pref.	66 - 69	Republic, com.	28½ - 30⅞
Car & Fdry, com.	47 - 50⅜	Republic, pref.	91 - 91⅞
Car & Fdry, pref.	110 - 114¼	Sloss, com.	63 - 65½
Steel Foundries	50½ - 53	Sloss, pref.	116
Colorado Fuel	30½ - 33	U. S. Steel, com.	67½ - 71¾
General Electric	139 - 143½	U. S. Steel, pref.	113⅛ - 116¼
Gr. N. ore cert.	45 - 53½	Westinghouse El.	59 - 61½
Int. Harv., com.	92¼ - 94½	Am. Ship, com.	83 - 84
Int. Harv., pref.	121	Chi. Pneu. Tool	36 - 37
Int. Pump, com.	43½ - 44⅝	Cambria Steel	42⅛ - 44¼
Locomotive, com.	38½ - 40⅝	Lake Sup. Corp.	16⅞ - 19½
Locomotive, pref.	107	Pa. Steel, pref.	105⅛ - 105½
Nat. En. & St., com.	16	Warwick	9½ - 9¾
Nat. En. & St., pref.	86½	Crucible St., com.	11⅝ - 11¾
		Crucible St., pref.	77¾ - 78¼

Canadian Shipbuilding Matters

TORONTO, July 9, 1910.—The encouragement the Dominion Government is holding out to shipbuilders is being responded to. At a luncheon given by the Montreal Harbor Board to Albert Vickers, chairman of Vickers Sons & Maxim, Mr. Vickers said that his firm hoped in the very near future to establish Canadian works in Montreal well worthy in every respect to duplicate the high reputation its works in Great Britain had earned. The opening in Canada for British firms such as he represents was brought to his notice, he said, at the time of the Imperial Conference, held in London in 1907. Upon the request of Sir Wilfrid Laurier and L. P. Brodeur, Canadian delegates to that conference, his firm sent a commission to Canada to investigate the possibilities for shipbuilding. The commission was greatly impressed by the prospects. It made an exhaustive report on the principal St. Lawrence ports, and as a result his firm is now interesting itself in the proposals for dry dock construction and shipbuilding in Canada. He added that he hoped the Vickers firm would soon become a factor in the marine and industrial development of the country.

It is announced from Ottawa that an agreement has been concluded under which the government will pay an annual subsidy of 3½ per cent. on the capital outlay, estimated at $2,500,000, of the Vancouver Dry Dock & Shipbuilding Company upon works at Vancouver. Shipbuilding works are to be established in connection with the dry dock.

Bounties and the Tariff

Besides paying 3½ per cent. annually for 25 years on the capital invested in dry docks of adequate capacity and equipment, the government will give contracts to Canadian shipbuilders for the construction of the vessels called for by the naval programme approved at the last session of Parliament, that is, if the cost is not more than 25 per cent. in excess of what the work would be done for in Great Britain.

It is freely predicted that the government will go farther next session and will give a tonnage bounty for the building of merchant vessels. This, it is said, will be accompanied by tariff changes in the interest of steel manufacturers. If builders of dry docks are to have the interest on their capital paid by the government, if Canadian builders of government warships are to have a premium of 25 per cent., and if the builders of merchant vessels are to have a bounty of $6 a ton, they ought, it is argued, to be able to stand a duty on the steel used in the shipbuilding and ship repairing industry. At present steel masts, beams, angles, sheets, plates and knees, when imported for use in the manufacture of ships, are free of duty. It is believed that the government would be prepared to put a 20 per cent. duty on these articles if it were to adopt a ship subsidy scheme. The arrangement would be welcome to the steel manufacturers as a compensation for the loss of the bounties on pig iron, steel and wire rods. C. A. C. J.

The Acheson Graphite Companies and Products

The International Acheson Graphite Company, Niagara Falls, N. Y., has arranged to erect a very substantial and large addition to its works on the lands of the Niagara Falls Power Company in that city. The addition will be in the nature of a furnace room, which will afford capacity for 10 or 12 new furnaces. The buildings will be of brick and steel construction and erected to the west of the present works, where there is ample room for still further enlargement. The additional furnaces will make possible a very large increase in the output of graphite, thus being indicative of the constantly increasing recognition of the value of the products of the company. These products are electrodes for electrochemical, metallurgical and electrical purposes and powdered graphite for dry cell filler, paint pigment, powder glazing, lead pencils, firearms lubrication, general lubrication, electrotypers' molding and polishing leads, &c. It will thus be seen that electric furnace graphite has acquired prominence in all fields where natural graphite has been used, but it may be added that the electric furnace Acheson-Graphite is recognized generally as being far superior to the natural product mined from the earth.

The Acheson Oildag Company, Niagara Falls, N. Y., has purchased a factory site of 30 acres at Port Huron, Mich. Fort Huron was selected as the site because of its comparatively pure water and excellent shipping facilities. Oildag has made phenomenal progress in the matter of establishing itself as a lubricant and conserver of petroleum lubricating oils, but, owing to the past limited manufacturing capacity of the company, the price was of necessity high and retarded its rapid introduction into general lubrication.

On July 1 the Acheson Oildag Company reduced the selling price of Oildag to approximately 60 per cent. of that previously quoted, thereby bringing it down to a price, when bought in quantity, of considerably less per gallon than that of the oil with which it is mixed. The presence of the deflocculated graphite in the oil makes each gallon equal to two to four gallons of plain oil. This policy of reduction in selling price, in order that the manufacturing interests may quickly obtain the benefits to be derived, is closely following that formerly adopted by Dr. Acheson, when he was president of the Carborundum Company, when he made the rather spectacular drop in the selling price of carborundum from $800 per pound to 10 cents per pound, thereby causing it to become a staple commodity.

The Machinery Markets

The dullness to be expected at this season exists in the machinery trade, and in most quarters only very necessary buying is being done. This is the inventory and stock taking season in most lines and the vacation let-up is noticed everywhere. In some machinery sections, however, there are manufacturers who are running ahead of the average business. New York machinery houses are doing a good business, and the New York Central Railroad has placed orders for more than $50,000 worth of equipment against a list issued some time ago. In Chicago the prospects for the fall business are especially good, as there are indications that some heavy railroad buying will be done in that market. Some machinery houses there have more unfilled orders on their books than at any time since the fall of 1907. In Milwaukee inquiries are especially good and railroad business is picking up. There are also good prospects on the north Pacific coast, as labor difficulties which have been about overcome have been holding up some good business there. In the South favorable climatic conditions have been responsible for some good sales and the machine shops and foundries are fairly busy in that section. In the Southwest business is quiet. There are reports to the effect that in the Northwest the outlook for the future is especially good, according to inquiries now before the trade, and there is an especially good call for contracting equipment in that market. Business is holding its own in Detroit, and in St. Louis sellers of metal working machinery are in some cases doing a business that is more than satisfactory. The market in Pittsburgh is irregular; machine shop and mill equipment is not selling very well, but there is a better demand for power equipment. A similar condition exists in Philadelphia. A Cleveland machinery house has booked an order for $12,000 worth of equipment to be shipped to an automobile manufacturer in Ohio. The attention of New England machinery dealers has been attracted by the announcement that several companies are organizing in that territory for the manufacture of aeroplanes and accessories. It is stated that the business should have a relatively important future in New England.

New York

NEW YORK, July 13, 1910.

The New York Central Railroad has placed orders in the New York market for more than $50,000 worth of machinery, to be delivered at West Albany and other points. These orders are against a list which has been before the trade for some weeks, and they cover a general line of machine tool and foundry equipment. This is about the only railroad business of any consequence that has been done in this territory within the last two months, and the only other large list before the trade is that of the Delaware, Lackawanna & Western Railroad, against which, from all accounts, nothing has been bought. There is a good volume of inquiries before the New York trade at present and business is better than it usually is at this time of the year. Many manufacturers are making their annual inventories and some of them are making inquiries, which indicate that they will make purchases for replacements. There is a healthy demand for second-hand machinery, for which fair prices are being obtained. Manufacturers of milling machines, planers and shapers are still behind in their orders and some types of these machines cannot be had under three months' delivery.

The Simms Magneto Company, 1780 Broadway, New York, will shortly buy machinery equipment, particularly in the line of machine tools, as the company has been making inquiries in the trade which indicate it expects to make extensive purchases. It is apparent that these purchases are intended for equipping a complete plant, but as yet it has not been made known as to where the proposed plant will be located.

The Griscom-Spencer Company, which recently took over the plant of the Goubert Mfg. Company at Bergen Point, N. J., will, from all accounts, make purchases of machine tool equipment. It is understood that in addition to turning out the line of specialties recently made by the Goubert Mfg. Company, the Griscom-Spencer Company will add to its line. The plant at Bergen Point was taken over equipped for manufacturing purposes, but it is understood that it will be brought up to date and important machinery additions will be made.

Machinery men who make and sell electrical power equipment and transmission apparatus are watching the Pennsylvania Railroad's suburban developments in New Jersey. The company is planning to electrify its lines toward and beyond Newark, and it is expected that its electrification zone will be extended to Elizabeth and perhaps as far as New Brunswick. For some time the company's engineers have been making plans looking toward the installation of a high speed service in that direction, and it is known that the railroad has been quietly acquiring more land along its lines and improving its road bed, which are the first steps toward the proposed improvements.

The New York, Westchester & Boston Railway, J. L. Cryder, chief engineer, 63 Beaver street, New York, has awarded all its contracts for the construction of its trolley lines through Westchester County, and it is expected that the system will be completed in from 12 to 15 months. Proposals for eight stations, to be built of reinforced concrete at White Plains road, Morris Park, Baychester avenue, Dyre avenue, Kingsbridge road and East Sixth street, Mount Vernon and Webster avenue, New Rochelle, and Pelham parkway, are now being received, and the company has closed an order for 150,000 railroad ties. As yet nothing has been done toward erecting or equipping the repair and machine shop, included in the company's original plans.

The United States Lighting & Heating Company, 30 Church street, New York, expects to have the large plant it is now constructing at Niagara Falls, N. Y., completed by fall. A main building, 200 x 400 ft., is about finished, and other structures are being erected. The company has 18 acres of land at Niagara Falls, and the plant will be devoted to the manufacture of electrical appliances, chiefly lighting systems for railroad trains and storage batteries for automobiles and commercial trucks. No car equipment will be needed, as contracts for furnishing Niagara power have been entered into with the Hydraulic Power & Mfg. Company, but it is expected that heavy purchases of general machinery will be made.

The Gunn Motor Company, Utica, N. Y., which was recently organized, has been incorporated with an authorized capital of $300,000 to manufacture and sell eight-cylinder motors for automobiles and commercial trucks. The officers of the company are: President, John K. Gunn; vice-president, William T. Baker; treasurer, Charles W. Wicks; secretary, John J. Town; assistant secretary, Guy H. Little. The company has been making some inquiries in the trade which indicate that it will do some good buying for its proposed plant.

The Newark Last Works has been incorporated with a capital stock of $100,000 and will manufacture shoe lasts and shoe trees at 29 Congress street, Newark, N. J., where a plant is being fitted with the necessary machinery, which includes woodworking equipment. John W. McGrain, who was recently connected with the New Jersey Shoe Tree & Last Company, is president of the new company.

The Heller Brothers Company, 897 Mount Prospect avenue, Newark, N. J., is erecting an addition to its plant, 75 x 200 ft. in size, to increase its rolling mill capacity. The company will install a train of 10 and 16 in. rolls.

The Garretson Engineering Company has been incorporated at Buffalo, N. Y., by Albert D. and Harry D. Garretson and Wm. M. Hoffman with a capital stock of $100,000. The company will engage in the manufacture of engines, electrical generators, aeroplanes and other air craft. Offices 786 Ellicott Square Building.

The F. N. Burt Company, Buffalo, N. Y., manufacturer

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of paper boxes, is taking bids for a six-story addition to its factory at Niagara street, Potomac avenue and the New York Central Belt Line, 57 x 140 ft., to be of reinforced concrete construction.

The Jewell Steel & Malleable Company, recently incorporated at Buffalo, N. Y., with W. E. Jewell as president and A. W. Valentine as secretary-treasurer, has had plans prepared and is receiving bids for a plant to be erected at North Buffalo on a site of four acres, with New York Central Railroad connections. The main building will be 130 x 140 ft. Most of the equipment, including melting furnaces and annealing ovens, has been purchased. Mr. Jewell has for several years been general superintendent of the plant of the Acme Steel & Malleable Iron Works, Buffalo, and Mr. Valentine has been at the head of the sales department of the same concern.

Cornell University, Ithaca, N. Y., has completed plans for the erection and equipment of a chemical laboratory, 40 x 80 ft., three stories, to cost about $50,000.

The Victoria Paper Company, Fulton, N. Y., contemplates building an addition to its paper mill on First street; also to installation of gas producer for power, with a capacity of 1500 hp.

The Federal Creosoting Company of Chicago, Ill., has commenced work on its Tie creosoting plant at West Rome, N. Y., which will include two retorts, power house and office building.

The Buffalo Dry Dock Company is adding a one-story brick and steel engine and boiler house to its ship building plant on the Buffalo River at Ganson street, Buffalo.

The Rice & Adams Company, Buffalo, N. Y., manufacturer of dairy machinery, is adding a small foundry building to its plant at Chandler street and the New York Central Belt Line.

The New York Central Railroad Company has commenced construction of a 50-stall roundhouse at East Rochester, one-story, 90 ft. deep, of reinforced concrete.

The Mine & Smelter Supply Company, with executive offices at 42 Broadway, New York, has taken over the agency for the Western territory of the United States of the pumps made by the Epping-Carpenter Company, Pittsburgh, and the compressors made by the Bury Compressor Company, Erie, Pa.

Catalogues Wanted

The Engineering Supervision Company, 43-45 West 134th street, New York, is arranging an up-to-date catalogue department and desires printed matter relating to metal working machinery, supplies, material, &c.

Chicago

CHICAGO, July 12, 1910.

While the Chicago machinery market is very dull just now during the inventory and repair season in the manufacturing world, there has been a general improvement the past month in the feeling in the machinery trade. Some of the houses ran ahead of their average sales during June, and prospects are generally considered good for fall trade. The Chicago & Northwestern has closed on practically all of the list of tools on which it invited bids recently, a leading manufacturer of heavy tools having taken more than half the business, while the remainder is scattered. It is expected that the Chicago, Burlington & Quincy will begin purchases some time during the next month on its list for the Havelock, Neb., shops. More activity is expected from now on in purchases by railroads, and as the lists that have been pending amount to several millions of dollars, this business will form an important feature of fall trade. The general dealers do not profit much by this railroad business, as they only get scattering orders, but indirectly they profit by it as this business fills up weak spots in the market among manufacturers whose bookings have been light the past six months.

Chicago machinery houses began the second half of the year with more unfilled orders on their books than they have had at any time since the fall of 1907. In fact, complaints are beginning to appear among dealers because the factories in some lines are so far behind, a condition which makes trouble for the dealer in taking new business. The sold-up condition of the factories on milling machines is promoting interest among buyers in universal and face grinders. In many lines remarkable results have been shown in the use of improved grinders for work that was formerly done on milling machines, as well as on planers and shapers. There has been an unusual demand recently for second-hand tools, and in some lines the market is practically bare and dealers are out looking for used tools which are sought by prospective buyers. Altogether the turn of the half year finds a generally hopeful feeling in the trade. As one Chicago dealer expresses it, business would be fine if those Wall Street fellows would only get off the earth.

The Carmody Foundry & Machine Company, recently incorporated with a capital stock of $100,000, has purchased the plant formerly owned and operated by the late J. T. Carmody in Cedar Rapids, Iowa. It consists of a two-story foundry building, 80 x 120 ft.; boiler shop, 80 x 100 ft.; blacksmith shop, machine shop, &c., 80 x 120 ft. The company is prepared to make all kinds of gray iron castings, boiler, stack and sheet iron and general machine shop work.

The Imperial Brass Mfg. Company, Chicago, is having plans prepared for a factory building, 100 x 125 ft., to be erected at Center avenue and Harrison street, at a cost of about $85,000.

Utt Brothers, 108 La Salle street, Chicago, will construct a dam and erect a power plant across the Iowa River at Wapello, Ia.

The Rose Hill Tile Company, Rose Hill, Ia., has been incorporated with an authorized capital stock of $10,000 to manufacture drain tile, brick, building blocks and posts. W. W. Denny is president; H. D. Jarvis, secretary; J. E. Busby, treasurer.

At a meeting of the stockholders of the Belvidere Screw & Machine Company, Belvidere, Ill., the following officers were elected and a site selected for the location of its plant: Frank S. Whitman, president and treasurer; George E. Marshall, vice-president; Willis S. Brown, general manager and secretary. The site is on Madison street, adjacent to the Chicago & Northwestern Railroad. Work on the new factory will be commenced at once.

The Collinsville Electric Company, Collinsville, Ill., incorporated with a capital stock of $100,000, is erecting a plant which will be equipped with two 500-kw. turbine, boiler with stoker, pumps, condenser and auxiliary equipment. The company has also taken up an existing plant which is now in operation.

The Eclipse Engine & Machine Company, Springfield, Ill., has taken over the plant of the Lorrimore Novelty Works of that city and will install one double acting drum ing press, one reducing press for use in the manufacture of patented force feed lubrication oil cans, one boring mill, one radial drill and other machines for its engine department.

The American Lawn Mower Company, Muncie, Ind., is erecting a three-story brick factory building and enlarging its present building by the addition of a third floor, which when completed, will double its manufacturing facilities. All machinery to be installed will be of special make and is now ready for installation.

The Commonwealth-Edison Company, Chicago, has plans completed for a power generating plant to be erected on the north branch of the Chicago River at California avenue and Roscoe street. It will comprise five buildings of various dimensions and is estimated to cost $1,500,000.

The electric generating and distributing properties of the Interstate Light & Power Company, with headquarters at Galena, Ill., have been purchased by H. M. Byllesby & Co., Chicago, who propose to make additions and improvements.

The Heat, Light & Power Company of Muncie, Ind., has increased its capital stock from $30,000 to $500,000. H. E. Hurd is president.

The Elwood Iron Works, Elwood, Ind., has been incorporated, with $50,000 capital stock, to manufacture machinery and iron and metal products. The directors are W. E. Durbin, C. C. De Hority, Thomas E. Palmer, George P. and M. J. Fogarty, Wayne Leeson and Thomas Connor.

The American Rolling Mill Corporation's plant at Muncie, Ind., sold at a receiver's sale several months ago, is being dismantled and the machinery and material removed to other cities.

The Dominion Motors Company has been established at Walkerville, Ont., after the failure of Columbus, Ind., to secure the industry. Earl Winans of Columbus is at the head of the company.

James F. Lynch, manager of the Danville Light, Heat & Power Company, Danville, Ind., has been granted a franchise for a similar plant at Shoals, Ind.

The L. C. S. Motor Company, Ft. Wayne, Ind., has been incorporated, with $100,000 capital stock, to manufacture automobile parts. The directors are Charles LaRue, Jeremiah Carmer and C. O. Snyder.

The Whitely Steel Company, Muncie, Ind., has increased its capital stock from $10,000 to $40,000. E. J. Whitely is secretary of the company.

The Star Milling & Electric Company has been incorporated at Lima, Ind., with $10,000 capital stock, to manufacture and transmit electricity. The directors are Oliver P. McKee, Harriet McKee and Emanuel Ritzer.

Iseman & Richer's sawmill and planing mill at Denver, Ind., was destroyed by fire July 5.

The Garver Track Laying Company has been incor-

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rated at Urbana, Ill., with $30,000 capital stock, to do general contracting for steam and electric railroads. Taylor Garver, head of the company, is the inventor of a track laying machine operated with compressed air, capable of laying 4 miles of track a day, it is claimed. Oliver W. Lamb of Urbana and Harry M. Grant of Casey, Ill., are other stockholders.

The E. E. Pitman Handle Company's factory at Logansport, Ind., was destroyed by fire July 8, with $10,000 loss. The plant will be rebuilt.

The Caswell-Runyon Novelty Works, Huntington, Ind., will build a $15,000 addition in order to increase the manufacturing facilities.

The Rockford Milling Machine Company, Rockford, Ill., has been incorporated with a capital stock of $25,000 to manufacture and deal in machine tools, &c. The incorporators are Edwin Cedarleaf, Levin Faust and Swan F. Anderson.

Pittsburgh

PITTSBURGH, PA., July 12, 1910.

The market here recently has been very irregular. In the aggregate orders continue large; but practically all buying is done in spots and very little reliability can be placed upon the demand from any particular source. Some contracts of considerable size, now being booked, originate in quarters from which nothing was expected at the present time, while estimates that have been out for some weeks have, in many instances, failed to develop any actual business. Machineshop, foundry and mill equipment is moving slowly. Power units and electrical apparatus of various kinds sell to better advantage than anything else, and the local shops are crowded with such work, with excellent prospects for the fall and winter months. Hydroelectric projects, if all carried to completion, would alone be sufficient to keep a large number of men steadily employed in the manufacturing plants of the district that make a specialty of machinery for water power developments.

The Connellsville Machine & Car Supply Company, Connellsville, Pa., has been awarded the contract for new equipment, including a steel frame tipple, to be installed by the Monongah Fuel Company, Monongah, W. Va. The Ross Engineering Company, Fairmount, W. Va., is planning and supervising the improvements. There will be a great deal of activity of a similar character, during the remainder of the present season, in strengthening the facilities of other mining properties and coal handling plants of the district.

Dealers here will furnish considerable material in connection with the work on the new line of the Western Maryland Railroad from Cumberland, Md., to Connellsville, Pa., which will be divided among a large number of contractors, including the Connestoga Construction Company and Foley Bros., Pittsburgh; American Engineering Company and John B. Carter Company, Indianapolis; F. W. Stanley Construction Company, Conneaut, Ohio; Handon & McCourt Company, Akron, Ohio; R. Galiardi, Connellsville, Pa.; Head & Right, Chicago; Robert Will Construction Company, New York City; Ryan & Mannington, Springfield, Mass.; W. M. Bates, Memphis, Tenn., and Fisher & Carroza, Baltimore, Md. Others will be selected during the present month. The general contract, which is stated to approximate $12,000,000, has been let to the Carter Construction Company, Pittsburgh.

The Keystone Furnace Construction Company, whose offices are in the Fulton Building, Pittsburgh, is making a feature of water cooling devices for use with open hearth furnace work, which have been demonstrated to considerably increase the operating economy of a plant. The installations made by the company are covered by exclusive patents.

The Scottdale Foundry & Machine Company, Scottdale, Pa., announces that it will make a specialty in future of vertical gas engines in capacities from 125 to 200 hp., especially designed for driving electric generators. The design of these machines is one that has shown excellent results under tests.

It is reported from Cadiz, Ohio, that a large electric generating station will be erected there by the Wheeling, Cadiz & Tuscarawas Traction Company. Further particulars, including the company's present headquarters, are lacking; but its officials can probably be reached at that place.

The Aspinwall filtration plant of the city of Pittsburgh will be considerably extended and new equipment provided. Mayor Magee has just approved an ordinance for securing additional ground to be used in making the contemplated improvements. Further capacity in pumping engines for water distribution service will also be needed shortly.

The Stoughton Engineering Company, through its Pittsburgh sales office, is extensively introducing its steel converters among the jobbing foundries of this district and the West. For the process used there are a number of interesting claims made which appear to be well substantiated in practice.

The Springfield Coal Mining Company is installing at its shaft in Edensburg, Pa., a winding engine for heavy duty, which was furnished by Wickes Bros., Saginaw, Mich., through their Pittsburgh office. Other improvements are also being effected which will give the company a large season's output.

Some electrical and other equipment will be furnished by manufacturers here for new gas engine building shops which the Rockwell Mfg. Company is reported to be erecting at West Chester, Pa.

Plans are being considered by the motive power officials of the Buffalo, Rochester & Pittsburgh Railway Company for installing additional tools for repair work, either at Du Bois, Pa., or another point, but nothing definite has as yet been decided upon, so far as can be learned.

The improvements to be made this summer in the plant of the Pittsburgh Steel Foundry at Glassport, Pa., including new yard handling equipment, will afford additional facilities that are urgently needed, in view of the present demand upon the company for heavy castings. Orders have been plentiful all through the present season, with excellent prospects for the future.

Centrifugal pumping machinery is being specified to such an extent this year that the Erie Pump & Engine Works, Erie, Pa., has had all it could do lately to keep up with the requirements of the trade. This company manufactures a very compact, easily operated type of pump which is adapted to a wide range of service and has found particular favor among mill owners, contractors, &c.

Builders of pumping machinery in this district are figuring on new equipment to be installed during the coming fall in the water works at Atlanta, Ga.

In connection with the improvements recently determined upon, the Cambria Steel Company, Johnstown, Pa., will install a battery of Taylor stokers manufactured by the American Ship Windlass Company, Providence, R. I.

The purchase of electric generating machinery additional to that included in the original plans, for supplying current to the Southern Cambria Railway, Johnstown, Pa., which was expected to be made in the near future, will probably be postponed, owing to the decision of the road's officials not to undertake certain construction work north of Mineral Point, where the power plant and repair shops have been located.

The Standard Whiffletree & Forging Company, Pittsburgh, which recently succeeded the Pittsburgh Tubular Steel Wriffletree Company, are continuing the business with a somewhat extended line of product and improved equipment. John A. Buchanan, who held a similar position with the old company, has been retained as manager.

The Fairbanks Company, Pittsburgh, has sold to the Pressed Radiator Company, West Pittsburgh, Pa., a 200-pound automatic drop hammer, built by the Standard Machinery Company, Providence, R. I.; Union Switch & Signal Company, Swissvale, Pa., a three-ft. radial drill, the latest type manufactured by the Prentice Company and to the Pennsylvania Company, equipment for installation in the car shops at Pittsburgh, Fort Wayne and the new shops at Conway.

R. W. Oswald, Pittsburgh representative of the Pennsylvania Boiler Works, Erie, Pa., has sold two 150-hp. horizontal return tubular boilers for 125 pounds pressure, to the Union Clay Mfg. Company, Empire, Ohio; Connellsville Mfg. & Mine Supply Company, Connellsville, Pa., 125-hp. return tubular portable boiler.

The Pennsylvania Rubber Company of Jeannette, Pa., has increased its capital stock from $1,500,000 to $2,000,000 to finance the construction of several new buildings. The corporation controls the Pennsylvania Rubber Company of New York, the Pennsylvania Rubber Company of California and the Westmoreland Rubber Mfg. Company, and manufactures rubber tires, air brake hose and other rubber goods.

The Westinghouse Air Spring Company, Wilmerding, Pa., one of the George Westinghouse interests, has increased its capital stock from $5000 to $300,000.

The Gaeth Automobile Company of Pittsburgh has been incorporated with a capital of $500,000, only partly paid in, and it is stated will build a plant in the vicinity of East Pittsburgh, for the manufacture of automobiles. The incorporators are George S. Patterson, W. J. Harvey and George J. Protzman. A small plant at Cleveland, in which the Gaeth automobile is now being made will be dismantled and the equipment moved to the proposed new plant.

T. H. McGraw, Jr., Park Building, Pittsburgh, representative in that district of the Erie City Boiler Works, Erie, Pa., has recently made sales as follows: Board of Control, Martins Ferry, Ohio, 600-hp. boiler for installation

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in municipal electric light plant; F. M. Graff for installation at the Roaring Run and the Kiskiminetas coal works, one 200-kw. engine generator set, two 150-kw. engine generator sets, four 150-hp. boilers and a four-valve Erie city engine; D. B. Zimmerman, Somerset, Pa., for Quemahoning Coal Company, two 150-hp. boilers for the operation of air compressors.

The Bessemer Gas Engine Company, Grove City, Pa., has received an order from the National Aluminum Company of the United States, Clarksburg, W. Va., for a 300-hp. Bessemer gas engine to drive generators, which in turn will operate individual motors.

The Riverside Metal Refining Company, Connellsville, Pa., has made large sales this season to iron and steel mills, as well as other industrial plants where heavy machinery is operated under similar conditions, of its U. S. Standard babbitt for use in bearings. The mixture employed for the purpose is stated to be the result of operating experience and tests extending over a large number of years. The company is now making some improvements in its equipment.

The Harshey Machine & Foundry Company, Manheim, Pa., manufacturer of the Baum type of separators, is represented in Pittsburgh by Edgar M. Moore & Co., with whom selling arrangements were recently made. A good trade in this line had already been established.

The Pittsburgh Gage & Supply Company, Pittsburgh, has recently received numerous contracts for high pressure piping, among which are the following: Monongahela River Consolidated Coal & Coke Company, power plant at Boston, Pa.; New River & Pocohontas Consolidated Coal & Coke Company (two jobs) Berwind, W. Va.; Red Jacket Jr. Coal Company, Red Jacket, W. Va.; Thacker Fuel Company, Thacker, W. Va.; Andrews & Hitchcock Iron Company, Hubbard, Ohio; American Sintering Company, power plant, Hubbard, Ohio; Pittsburgh-Belmont Coal Company, Neffs, Ohio; Pittsburgh Steel Company, Monessen, Pa. It has also received orders for White Star continuous oiling systems as follows: Evans & Almirall Company, Ellis Island, N. Y.; Hewes & Phillips, Philadelphia, Pa.

The Pittsburgh office of the Allis-Chalmers Company has received a contract from the Republic Iron & Steel Company for four blowing engines to be installed at its No. 4 blast furnace now being erected at Haselton, Ohio. The contract includes two high pressure engines with steam cylinders 44 x 60 in. and two low pressure engines with steam cylinders 60 x 84 in., each engine being equipped with 60 x 84 in. air tubes. The delivery of the engines is expected to be made in the latter part of October.

In an item printed on page 16 in *The Iron Age* of July 7, relating to the Taylor Steel Company, the address was given as Canton, Ohio, while it should have been Columbus, Ohio. The company has not yet selected a site for its new plant to make crucible steel forgings, but will do so in a short time, and will then be in the market for considerable new equipment.

Philadelphia

PHILADELPHIA, PA., July 12, 1910.

Although the demand for machinery and tools still shows irregularity, there has been a pronounced betterment reported in that for some classes of equipment, principally of a special character. This is particularly the case in the foreign demand, a marked improvement during the past few weeks being noted, shipyards particularly making quite a little inquiry. There has also been some demand for special tools for field work in connection with recent contracts given out for work on the Panama Canal. The volume of business transacted by merchants and manufacturers has not been very large, the market generally exhibiting the usual characteristics of the midsummer season. The trade, however, while not anticipating any very heavy business during the summer months, looks forward to considerable activity in the early fall. Tentative inquiries made recently give promise of developing into business, and, with order books in pretty fair shape, manufacturers are showing no anxiety as to future business. Owing to the heated spell activity at the various manufacturing plants has been less pronounced. The midsummer shutdown of industrial establishments also has a retarding effect on business, which usually requires several weeks to work off.

Quite a fair volume of business continues to be transacted in power equipment lines. A fair inquiry for boilers and engines of moderate horsepower is before the trade and a good volume of business is being placed from week to week, although individual orders are, as a rule, not large.

Both iron and steel castings are in better supply, although production is somewhat restricted owing to the heated term. Some steel casting plants can now make much better deliveries and, while order books are still in a fairly satisfactory condition, there is more disposition to get business, particularly for near future delivery. In some instances prices are reported as less firm.

The Salem Electric Company has, it is stated, purchased a large tract of land on the water front at Salem, N. J., on which it is proposed to erect a plant three times the capacity of the present one.

The Keystone Steel Casting Company, Chester, Pa., has practically completed the additions to its plant, referred to previously in this column. The increased facilities of its crucible steel melting department will enable the company to triple its former output of crucible steel castings.

The Riehlé Bros. Testing Machine Company is quite busy in all departments. An 800,000-lb. testing machine has just been furnished the Lehigh University. A number of smaller machines have been furnished various customers, and orders are in hand for shipment to China, Japan and other foreign countries, as well as from domestic customers.

Sibson & Stern, Inc., lace manufacturer, is erecting a two-story addition, 50 x 77 ft., to its plant, Stenton avenue and Wyoming street. The addition will be used for manufacturing purposes and purchases of additional knitting machinery for its equipment will be made.

C. G. Seidel has awarded a contract to H. L. Lovett for the erection of a large garage, to be known as the Logan Garage, on North Broad street, near Logan Station. The building measures 50 x 80 ft. on the ground plan, and will be equipped with the usual facilities for garage requirements.

The Stromeyer Brake Shoe Company, with a capital of $100,000, has been incorporated under the laws of the State of New Jersey. Julius Stromeyer, C. A. Harris, J. H. G. Peddle and William M. Martin are the incorporators. The company was formed to look after the foreign business of the Philadelphia Brake Shoe Company and does not involve the construction or operation of any plant.

Estimates were taken last week by John T. Windrim for the estate of Stephen Girard in connection with the erection and equipment of a power house to be erected at Twentieth and Oregon streets. The building is to be of reinforced concrete, and will be used as a heating and lighting station for dwellings under erection in that vicinity by the Girard Estate. Contracts have not yet been awarded.

The Baldwin Locomotive Works has booked an order for 50 heavy freight engines of the "Mikado" type from the Baltimore & Ohio Railroad. From orders now on hand continued activity of the company's plants for many months is assured. Some 15,000 workmen are employed at its various plants. Little new business is anticipated during the summer months by the officials of the company; a better movement in the fall is, however, expected.

Arthur A. Klonower and Lawrence C. Jost have formed a co-partnership under the name of Klonower & Jost, with offices at 1538 Cherry street, where they will engage in business as engineers and contractors in heating, ventilation and electrical work. Mr. Klonower was for a number of years connected with Francis Bros. & Jellett, engineers. Mr. Jost was for some time with the same concern, but more recently associated with John Borden Bros. as engineer.

J. Morton Poole Company, Wilmington, Del., has begun shipments on the delivery of 12 10-cwt. Umpherston engines for the West Virginia Pulp & Paper Company, part for delivery at its Tyrone, Pa., and part for its Piedmont, W. Va., plant. This concern also has a number of orders in hand for boring mills and has shipped one of the heavy 8-ft. type to the Baker Iron Works, Los Angeles, Cal. A very satisfactory sale of Fitchburg lathes, manufactured by this concern and sold through Fairbanks & Co., is reported, particularly for those having long beds. The plant is actively engaged and has a very good volume of business in its books.

The Hilles & Jones Company, Wilmington, Del., reports inquiries during the past week or two to have been larger than ever before in its history. There has been considerable inquiry for export and two very fair orders for tools for shipment abroad have been booked. Orders in good number have been taken, covering a very general class of equipment, from some of the railroads, shipyards and industrial plants. Shipments are now being made against one of the largest single contracts ever taken by this concern, which included some 25 to 30 large, heavy tools for the American Bridge Company's plant at Gary, Ind. The Hilles & Jones Company has now in course of erection a new three-story modern office building, measuring 36 x 75 ft. on the ground plan. On completion the space occupied by its present office will be added to its machine shop.

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Cleveland

CLEVELAND, OHIO, July 12, 1910.

The usual midsummer dullness is being experienced in the local machinery market. Business, however, is no worse than it usually is at this time of the year. Some of the dealers are getting a fair volume of small orders, mostly for small single tools. These orders are coming almost wholly from small machine shops and from makers of automobile parts and accessories. The only good sized order reported by a local machinery house during the week was for $12,000 worth of machine tools for an automobile manufacturing company in Ohio that is enlarging its plant. In the opinion of machinery men the demand for additional equipment from the automobile trade will not be nearly as heavy during the latter part of 1910 as during the corresponding months of last year, when a very large amount of new machinery was purchased by the northern Ohio and southern Michigan automobile plants. In carrying out their plans for new plants or extensions started last year and not yet fully completed, some of the larger automobile concerns will probably come into the market during the fall for considerable machinery, but it is believed that some of the smaller makers will go very slow in adding to their capacity, so that the demand from this source will not be so general as a year ago. Local railroad lists have not yet come out and there is practically no buying on the part of the railroads.

Among the local machine tool builders orders have fallen off considerably, but some plants have a good volume of business on their books. There is not much demand for heavy conveying machinery, but local manufacturers of that class of equipment report that small orders are quite plentiful, and with heavier work taken earlier in the season their plants are well filled up for the balance of the year.

The Cleveland Motor Truck Company, Cleveland, recently incorporated with a capital stock of $20,000, which will soon be largely increased, will equip a plant for the manufacture of motor trucks, both gasoline and electric, ranging in capacity from ½ to 6 hp. The company expects to lease a building which will be fitted up for manufacturing purposes within the next few weeks. It is announced that considerable machine tool equipment will be required, but the list has not yet been prepared. The company has established offices at 602 New England Building. H. W. Woodward is president and W. M. Hager, secretary.

The Foote-Burt Company, Cleveland, is enlarging its plant by the building of an erecting shop, 50 x 125 ft. The portion of its plant now used for erecting purposes will be used for enlarging the capacity of the machine shop. The plant of this company has been taxed to its fullest capacity during the past year, a large volume of its orders for drilling machinery coming from the automobile trade. The company reports that it now has enough orders on its books to keep it busy until November.

The Wright Wrench & Forging Company, Canton, Ohio, the name of which was recently changed from the Wright Wrench Company, will engage in the manufacture of machine forgings in addition to wrenches. The company has moved its office to its new plant in South Canton. The plant is near completion and will be used for manufacturing purposes in a few days. The company expects shortly to get out a new pipe wrench and probably some other products in the wrench line.

The Economy Stove Company has entered into a contract with the Sandusky Business Men's Association to move its plant from Cleveland to Sandusky, Ohio. The company will be given a site and a bonus of $30,000, which will be put into buildings, in return for which it agrees to furnish employment for not less than 150 men. The business of the Economy Stove Company has outgrown its present quarters on Scranton road. It will build at Sandusky a complete plant for the manufacture of gas heating and cooking stoves, including a foundry for making its own castings. At present the company does not have a foundry.

The Brown Hoisting Machinery Company, Cleveland, reports that orders for small handling machinery are holding up well, and there is some demand for large equipment. The company has a large amount of work on hand, its plant being well filled up for the balance of the year.

In addition to the erection of a large plant at Niagara Falls, the National Carbon Company, Cleveland, will build an addition to its plant at Fremont, Ohio. The contract for the structural steel has been let to the Riverside Bridge Company, Martins Ferry, Ohio.

The Superior Rubber & Mfg. Company, Akron, Ohio, has increased its capital stock from $10,000 to $250,000 and announces that it will soon perfect plans for equipping a plant for the manufacture of tires and other rubber goods. Officers have been elected as follows: T. E. Moore, president; G. A. Shaw, vice-president; F. B. Adams, secretary, and A. L. Wright, treasurer.

The Baxter Stove Company, Newark, Ohio, will enlarge its plant by the erection of two new buildings of mill construction, two stories. One will be 54 x 200 ft. and the other 50 x 180 ft. Gas engines will be installed.

The Cuyahoga Nut & Bolt Works, Cleveland, has been incorporated, with a capital stock of $10,000, by F. McHale, F. DeEds, A. D. Spurney and W. T. Black.

The Wau-To Pipe Threading Machine Company, Toledo, Ohio, recently incorporated to manufacture and sell pipe threading machines and appliances and heating apparatus and appliances, has arranged to have its equipment manufactured under contract. The company's main offices will be at 605-607 Nasby Building, Toledo, and its directors are Charles E. Bennett, J. A. Miller, both of Wauseon, Ohio, and F. V. Meagley, E. L. Troup and C. J. Reuscher, all of Toledo.

The Elyria Iron & Steel Company, Elyria, Ohio, is manufacturing for the Hart Steel Company reinforced tie plates of a special pattern, which have been in heavy demand ever since the present rush of construction and maintenance work started.

The Heath Foundry & Mfg. Company, Plymouth, Ohio, has decided to equip its plant with automatic sprinklers and desires to hear from manufacturers of sprinkler systems.

The Bruce-Macbeth Engine Company, Cleveland, Ohio, has recently taken orders for 14 gas engines ranging in size from 75 hp. to 200 hp., in addition to a number of smaller gas power units.

Cincinnati

CINCINNATI, OHIO, July 11, 1910.

Machine tool builders are passing through a period of seasonable quietness. Some sporadic orders are being booked, but they rarely call for more than one tool. Inquiries are being received, and if a fair percentage of them result in business the fall trade will be generally satisfactory. The automobile manufacturers appear to have satisfied their wants, at least temporarily, and this breathing spell is enabling the tool builders to catch up on orders booked some time ago, but on some tools this result will not be attained before October; this applies especially to milling machines. With the exception of an order for a few tools from the New York Central, which was obtained last week by a local company, no buying has been done by the railroads. The export business is good.

Skilled labor is still in healthy demand, although a return movement of workmen, who left some time ago to follow the automobile trade, seems to have commenced.

Second-hand dealers are doing a fair business, and those who handle power equipment have recently received some nice orders from the South.

A large amount of construction work is going on in this section, and this naturally helps out the local situation. Quite a number of building plans are under way, which will not be given out until fall.

Among recent sales of the Cincinnati Iron & Steel Company are hand power cranes to the National Automatic Tool Company, New Richmond, Ind.; Columbiana Boiler Works, Columbiana, Ohio, and the Memphis Consolidated Gas & Electric Company, Memphis, Tenn.; nine electric traveling cranes to the Cincinnati-Bickford Tool Company, Cincinnati, and several shapers, radial drills and splitting shears which were shipped to the Southwest. The company reports its business for the past six months as being very good, and the demand for its Cisco lathes as being exceedingly brisk.

The main building of the plant the Victor Safe & Lock Company, Cincinnati, is constructing in Norwood will be 102 x 560 ft.; the machine shop will be 120 x 180 ft. There will be six other buildings, all one story and of brick, concrete and steel construction. Practically all of the necessary equipment has been contracted for. The company expects to be operating its new factory January 1.

The Hess Spring & Axle Company, Cincinnati, in order to take care of its rapidly increasing business, is planning an addition to its factory on Cook avenue. Building details are not yet available.

The Ritter Folding Door Company, Cincinnati, whose factory was recently moved from Newport, Ky., to a new building in the Elmwood district, has just booked an order for 96 of its patent warehouse doors to be installed in a large freight house now being constructed at Dayton, Ohio, by the Cincinnati, Hamilton & Dayton Railroad.

Work is progressing rapidly on the new automobile factory of the Schacht Mfg. Company, Winton place, Cincinnati.

Much interest is manifested in the coming annual outing

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of the Cincinnati Metal Trades Association, scheduled to be held at Chester Park July 30. It is expected that this will be the largest picnic ever given by the association and Secretary Manley is making arrangements to entertain 36,000 visitors. Among the metal workers are many of the best known athletes of Ohio and the athletic games will attract much attention. A new and novel feature this year will be a singing contest between quartettes from the many factories affiliated with the association.

A three-day outing, commencing Friday next, has been arranged by Secretary Manley of the National Metal Trades Association, which will be participated in by about 100 members and their friends. The party will motor out to Laughery Island Club, 30 miles from Cincinnati, returning Monday morning. Several interesting athletic games are on the programme.

Building progress on the new plant of the Cincinnati Machine Tool Company at Oakley has advanced to the stage where the company can definitely announce that it will be in its new home November 1. It reports domestic business as holding its own, while its export trade, especially from Europe, is steadily on the increase.

The Associated Foundries of Cincinnati were organized last week with the following officers: Henry Ritter of the Lunkenheimer Company, president; Wm. Gilbert of the Buckeye Foundry Company, vice-president; S. M. Blackburn of the John B. Morse Foundry Company, treasurer, and Walter Guyer of the Modern Foundry Company, secretary. It is the purpose of the organization to co-operate on questions of mutual interest and create closer social and business relations between its members. Headquarters will be in the office of the Cincinnati branch, National Metal Trades Association, and Secretary Manley of that association will supervise its business affairs.

The Sellers Kitchen Cabinet Company, Elwood, Ind., is finishing additions to its factory which will greatly increase its capacity. It is stated that most of the machinery, consisting of special woodworking machinery, has been purchased, but further equipment will be required later.

The Richter Company, successor to Richter & Co., will increase the capacity of its plumbing supply plant at 210-214 East Ninth street, Cincinnati, by erecting an additional story, giving it 4000 sq. ft. more floor space. Some air compressors, molding machines and other special machinery will be purchased.

The Indianapolis Traction & Terminal Company, Indianapolis, Ind., has awarded the general contract for the construction of its power house, which covers everything but the smokestack and the mechanical equipment. Work has been started on the foundation of the building and it is expected to be ready for occupancy by the first of next January.

The Niles Forge & Mfg. Company, Niles, Ohio, has increased its capital stock from $20,000 to $30,000.

The Auto-Electro-Lite Company, Indianapolis, Ind., has been incorporated with $15,000 capital stock to manufacture electric light generating machines. The directors are G. L. Fish, Ora May Fish and W. Fred McCloud.

The American Electric Headlight Company, Indianapolis, Ind., has been incorporated with $50,000 to manufacture electric headlights. The directors are Chas. S. Stone, Chas. N. Elliott and Harry B. Gates.

The William H. Clore Mfg. Company has been incorporated at Washington, Ind., with $38,000 capital stock, to manufacture silos and farm implements. The directors are William H. Clore, Edward D. Clore, P. J. Cavanaugh, M. N. Palmer and L. H. O'Donnell. The plant of the Clore Plow Company will be moved from Rising Sun to Washington.

The plant of the Border Lock, Nut & Bolt Company, Richmond, Ind., was sold at receiver's sale to William M. Kelley for $11,000. The probabilities are that the plant will be continued in operation.

Among the improvements to be made to the power house of the Terre Haute, Indianapolis & Eastern Traction Company, at Richmond, Ind., are two turbines, each of 450 kw. capacity, and four boilers.

The Chapman Steel Company has been incorporated at Indianapolis, Ind., with $50,000 capital stock, to manufacture iron and steel products. The directors are Niles Chapman, George C. Haerle and H. H. Hornbrook.

The Peerless Tank & Seat Works, Evansville, Ind., has increased its capital stock from $150,000 to $200,000.

The Piqua Blower Company, Piqua, Ohio, has found this a very favorable season for the sale of blowers to be used in foundry service. Inquiries from mines and smelters in the West are also strong, and there are good opportunities at present for placing apparatus of this kind in the countries of Latin America. With the widening circle of demand, the company's trade has increased to a point where a material enlargement of its shop facilities is looked for locally, although no official announcement of such plans has been made.

It is reported from Ironton, Ohio, that the Ohio River Lumber Company of that place will increase its working capital, with a view to extending its operations, including the construction of a large new timber cutting plant in one of the West Virginia districts.

The Buckeye Stamping Co., Columbus, Ohio, is providing for a large future output. It has just made arrangements for the construction of a new one-story building, 80 x 270 ft., of thoroughly modern construction and equipment.

Detroit

DETROIT, MICH., July 12, 1910.

So far as its effects are observable here, the buying movement for new plants and improvements throughout the Central West seems to be very well sustained. Manufacturers in Michigan, northern Ohio and Indiana are, apparently without exception, experiencing one of the most profitable seasons in their history, and dealers in practically all lines have been doing a very satisfactory business, taking each month as a whole. July will undoubtedly fall considerably below the level of May or June; but the closing weeks of August are almost certain to be active, and there is every indication that fall trade will open very strong. This applies particularly to equipment for metal working plants, purchases for which have been somewhat delayed in comparison with those made in behalf of general industrial establishments.

Benj. Bosse, president of the Globe Furniture Company, Evansville, Ind., is reported to be interested in plans for a new factory to be erected by the Big Six Chair Company, recently organized at that place, the equipment of which will include power and woodworking machinery. Electric motor drive is to be used, in accordance with the latest practice.

The Detroit Screw Works, Detroit, Mich., has derived a considerable percentage of its trade this season from automobile manufacturers, and more is offering at present than can be taken care of without prejudice to other branches of the company's business, which have also shown extraordinary activity. By another season its facilities for production of all kinds will be considerably greater.

Preparations are now being made at Grand Rapids, Mich., for rebuilding the box factory of the Brantley-Miller Company. It will be electrically operated.

The Grant & Wood Mfg. Company, Detroit, is getting its plant at Chelsea, Mich., which is being furnished with improved and extended equipment, in shape for a large annual production of automatic screw machines of the multiple spindle type, which will be made a specialty. High grade ball bearings will also be manufactured.

The Morehead Mfg. Company, Detroit, is putting on the market a type of steam trap which has been found very efficient for service in the power houses of industrial plants. Owing to the improvements that are now being very generally made throughout the country in the power equipment of such concerns, inquiries for steam appliances of this kind have recently been very liberal.

The Central Heating Company, Detroit, is about to proceed with the erection of an addition to its plant.

An interesting feature of the equipment of machinery-building plants, shops and foundries, is the rapidly developing use of steel bins and shelving for the stock and tool rooms, vaults, &c., a feature of which is made by Terrell's Equipment Company, Grand Rapids, Mich. This concern is manufacturing steel sections that can be used either for bins or shelving and are readily interchangeable, making the system a very flexible one.

A new power house 30 x 80 ft., with 90-ft. stack, has been built by the Indiana Lumber & Mfg. Company, South Bend, Ind. The equipment, which is now being installed, includes two boilers of 250 hp., with heaters, pumps and other auxiliary apparatus.

Work is being started on a three-story factory building, 80 x 120 ft., for the Holland Gelatine Works, Holland, Mich.

The Industrial Works, manufacturers of locomotive cranes, Bay City, Mich., is making some additions and improvements, including a large new office building. One of the units in the power house will also be replaced by another better adapted to the service. Contracts have all been let.

The Corliss engine for the power house of the Northwestern Cooperage & Lumber Company, Gladstone, Mich., will be built by the Filer & Stowell Company, Milwaukee; the generators and motors by the Allis-Chalmers Company,

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and wood-working machinery, &c., by the American Wood-working Machinery Company, New York.

The American Brass & Iron Company, Detroit, has thus far found this a very favorable season, so far as the demand for its products is concerned, and present indications point to a material increase in its manufacturing facilities before another year.

Some additional equipment for the pumping plant and waterworks system will be required in the near future at Wyandotte, Mich., where extensive improvements have been authorized. The installation of a pump of 3,000,000 gal. daily capacity is being discussed by the authorities, but one of 5,000,000 gal. delivery has been recommended and is more likely to be adopted. Representatives of the leading builders of pumping machinery are keeping in touch with the situation.

The Morton Mfg. Company, Muskegon Heights, Mich., which has made a large number of successful installations of its tools in leading railroad shops of the country, is having a good many inquiries from such sources, in addition to current business, which are likely to develop into orders by or before fall, as at many points equipment is urgently needed. Considerable interest is also manifested in its large portable draw shapers, such as those that have been in service at the West Allis, Wis., works of Allis-Chalmers Company for some time past.

A new building or shop addition, 35 x 50 ft., is to be erected shortly at the plant of the Central Boiler Works, Detroit.

Wickes Bros., Saginaw, Mich., have been experiencing an unusually heavy demand all through the first half of the year for machinery and appliances of various kinds used in boiler shops, tank works, &c., indicating great activity in those lines. Inquiries and sales are quite evenly distributed over the country as far as the Pacific Coast.

Parke, Davis & Co., Detroit, have let the contract for an addition to their power plant. Equipment has been purchased, so far as the main details are concerned, but some auxiliary apparatus may be needed later.

M. D. Bauer, 762 St. Antoine street, Detroit, is arranging for the construction of a manufacturing plant to be occupied by the Bauer Steel Body Company, which was recently organized here. In addition to metal bodies and hoods, gasoline tanks will be produced.

The Detroit Hoist & Machine Company, Detroit, Mich., in addition to its pneumatic hoists, is finding an excellent market this season for its various other products, including small engines for use with winches, derricks and other handling machinery. The compressed air appliances of its manufacture are finding a constantly widening market in foundries for construction work, &c., the demand from these sources having been particularly heavy all through the spring and early summer.

The Lobdell & Churchill Company, Onaway, Mich., which some time ago added automobile steering wheels to its products, is having all it can do to keep up with orders, and has recently been reported to be planning an extension to its plant.

John Brennan & Co., Detroit, have developed a large trade in boilers, tanks and steel plate work of all kinds for use in mining operations, as well as in penstocks, riveted pipe, &c., for the water power plants and supply lines by which they are nowadays so frequently accompanied. The present demand comes not only from northern Wisconsin and Michigan, but also from the West.

Frederick E. Wadsworth and H. Scherer, 1256 Jefferson avenue, Detroit, are erecting an automobile factory 65 x 631 ft., three stories, of cement construction, the foundations of which are practically in. The plant will be operated throughout with electric motors and will be equipped with a sprinkler system. The building is expected to be finished in 90 days.

Sealed proposals in duplicate will be received by the Board of Public Works, Grand Rapids, Mich., until July 21 for furnishing and installing pumping machinery.

The Pressed Steel Company, Detroit, Mich., is erecting an addition to its plant which will be used for assembling purposes only.

The Ideal Furnace Company, Milan, Mich., has increased its capital stock from $60,000 to $100,000 to take care of its rapidly increasing business. The company has lately commenced the manufacture of the Radiant hot water and steam boilers.

St. Louis

ST. LOUIS, MO., July 11, 1910.

Merchant sellers of metal working machinery report business in satisfactory shape and the outlook for fall trade good. Delay is still being experienced in getting orders filled, especially by the large and well known Eastern companies. In some instances parties have elected to take less standard machinery and appliances to meet urgent requirements. Inquiry for second-hand machinery is not as large as it is some seasons.

The Banner Iron Works has its new steel foundry addition well under way, which will have a first-class equipment of cranes and other modern foundry appliances.

The American Brake Company has begun wrecking some adjoining buildings on its property to make room for extensions to its plant. The company is having a good demand for its patent locomotive brake and will add new equipment.

The Brecht Butchers' Supply Company is preparing to move its ice plant here from Denver, Colo. This company, besides making additions to its St. Louis factory, has just installed a new direct connected Corliss unit in its new power house.

The American Car & Foundry Company's new plant at St. Charles, Mo., is nearing completion. Upwards of $1,000,000 has been expended.

The More-Jones Brass & Metal Company is erecting an addition to its plant which will be equipped with the latest machinery.

The Fernholtz Brick Machinery Company is erecting an addition to its plant which will be installed with new machinery.

The Fairbanks Company is erecting a large straw board plant at Federal, Ill., which is to be equipped with the requisite machinery.

The new addition to the Bemis Bros. Bag Company's plant is nearing completion and will largely increase the company's manufacturing capacity.

The Granite City Rolling Mills has recently made some extensive changes in its plant, and among other appliances has installed several electric cranes, including one Gantry.

The Mt. Vernon Car Mfg. Company, Mt. Vernon, Ill., has its new steel plant well under way and the machinery is beginning to arrive, among which will be a heavy American motor driven planer equipped with some of the new variable speed features. This plant will represent an investment approaching $1,000,000.

The large smelting companies with headquarters at St. Louis have been making some changes in their plants in Kansas, and orders for new equipment have been placed.

The tool business in St. Louis territory has brought out some pretty fair orders lately, including one for eight milling machines, some automatic screw machines, &c., for extensions in the plant of one of the machinery manufacturers, a large boring mill for Texas and some tools for Oklahoma.

The L. M. Rumsey Mfg. Company has just received a carload of gas engines, the demand for which is on the increase.

The city of St. Louis recently placed an order for $50,000 worth of machinery and tools to equip the forge shops in three high schools.

The Fulton Iron Works is very busy executing contracts for sugar mill machinery and Corliss engines.

The city of Independence, Mo., has purchased a 500-kw. General Electric turbo unit complete from the John A. Stewart Electrical Company, Cincinnati, Ohio.

The Conrad-Bering Lumber Company, Houston, Texas, whose plant at Pawnee, La., was recently destroyed by fire, has not decided as yet whether it will rebuild. The company states that if it can make a quick sale of the property at Pawnee the plant will be located elsewhere, but in the event of not being able to do this a 42 x 184 ft. building of mill construction will be erected, and sawmill, machine shop and power equipment will be installed.

New England

BOSTON, MASS., July 12, 1910.

The market has been depressed for the past week, though yesterday and to-day indicate that there is no stagnation in the machine tool trade, some fairly good orders having been placed. The announcement of large purchases of machine tools for the great enlargement planned for the Providence Engineering Works, Providence, R. I., by the new owner, the United States Motor Company, will have a cheering sound to the local machinery people. The Boston machinists' strike is petering out. The Massachusetts Railroad Commission has given permission to the Grand Trunk Railroad to build the necessary connections to assure the extending of the system to Providence, R. I., from the Central Vermont, at Palmer, Mass.

The business of the Providence Engineering Works, Providence, R. I., has been acquired by the United States Motor Company, which is consolidating important auto-

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mobile interests. The transaction carries with it large additions which will double the Providence plant. Plans are virtually completed for a manufacturing building adjacent to the present works, 40 x 220 ft., and five stories, for which large purchases of machine tools will be necessary. The structure will be of steel and concrete. The Providence Engineering Works have been making a specialty of automobile engines and transmissions for some time and this department of the business will be developed on a large scale, such being the purpose of the new building. The manufacture of the Rice & Sargent steam engine will be continued, but it is probable that the company's other steam types and its gas producer engine will be abandoned. The United States Motor Company has large properties in New England, comprising the Maxwell-Brisco Company, Auburn, R. I.; Columbia Motor Car Company, Hartford, Conn., and the Alden Sampson Company, Pittsfield, Mass., and all of the plants are either in process of enlargement or will be enlarged within the year. The Providence Engineering Works grew out of the consolidation of the Rice & Sargent Engine Company and the Providence Steam Engine Company in 1889.

The Wattles Stoking Register Company has been organized in Providence, R. I., to manufacture an apparatus known as the Wattles stoking register. It is designed to register automatically the degree of density or the entire absence of smoke passing through a chimney. The corporation is in the preliminary stage of organization, which will be perfected within a short time. The incorporators are Cyra B. Wattles and Dexter B. Potter, Providence, and Herbert R. Dean, Cranston, R. I. The authorized capital stock is $50,000. The company has an experimental plant in the Butler Exchange, Providence, and has already manufactured a number of the registers which have been installed in the chimneys of industrial power plants. A photographic process is employed. In an opening on one side of the chimney is placed an electric lamp, while on the opposite side a dial of sensitized paper receives the light rays through a slot as it revolves by clock work. In this way the density of the smoke passing through the chimney is registered photographically at each minute of the 24 hours. The periods of extreme density show white on the dial, while the most perfect combustion shows black. Between these extremes the record is shaded to give a very exact reading of the condition of the fire, both during working hours and those of idleness. The purpose is twofold, to effect an economy of fuel through skillful stoking and to abate the smoke nuisance through the same medium.

The Winsted Hardware Mfg. Company, Winsted, Conn., manufacturer of upholstery hardware and specialties, is in the market for second-hand machinery of modern type, as follows: Universal milling machine, medium size; universal grinding machine, medium size; two No. 51 or No. 52 National Acme screw machines, a small pressure blower, an exhaust blower for 10-in. pipe, and an edging or trimming lathe. The business is a new one, with T. H. Bronson as the president.

The Henry G. Thompson & Son Company, New Haven, Conn., manufacturer of hack saw machines and blades, will build a four-story addition to its factory on Elm street.

The G. E. Wood Tool Company, Plantsville, Conn., has completed a two-story brick addition to its factory, which will be devoted to the manufacture of chisels.

The Sterling Blower & Pipe Mfg. Company, Hartford, Conn., has changed its name to the Sterling Blower Company.

The new building of the Southington Industrial Company, Southington, Conn., which will be rented for general manufacturing purposes, will be 35 x 96 ft., three stories.

The Sandy River & Rangeley Lakes Railroad will build an extension of its line in Madrid, near West Phillips, Maine, which will open a large tract of timber lands which have hitherto been inaccessible because of the absence of transportation facilities.

Frederick B. Farnsworth, New Haven, Conn., has been appointed receiver of the Yale Safe & Iron Company, West Haven, on the petition of stockholders. The business is in a prosperous condition, so far as orders are concerned, it is stated in the press dispatches, the need of increased capital being the chief cause of the receivership. It is expected that this difficulty will be overcome by the addition of new money.

The contract has been awarded for the new foundry of the Deane Steam Pump Company division of the International Steam Pump Company, Holyoke, Mass. The building will be of steel and brick, 150 x 290 ft., one and two stories.

Plans have been prepared for a machine and carpenter shop and laundry to be built for the Boston State Hospital at Mattapan, Mass., to cost $40,000.

Additions to general manufacturing plants of New England include the following: Maine Wood Reduction Company, Mexico, Maine, large works for the production of alcohol, acetate of lime and tar and charcoal, with the ultimate intention of manufacturing a wide variety of other by-products; Windham Silk Company, Willimantic, Conn., large addition to its silk mills.

The Connecticut Peat Fuel Company, Hartford, Conn., has been organized with a Connecticut charter to manufacture peat into carbonized peat or charcoal or coke. The incorporators are Charles E. Whitmore, New Britain; H. J. Wickham, Manchester, Conn., and Edward A. Beals, Hartford, the last named being the treasurer. The company will begin business with $25,000.

The Union Machine Company, Fitchburg, Mass., manufacturer of paper machinery, has leased the large brick building formerly occupied by the Fitchburg Steam Engine Company, located between the present shop and the Boston & Maine roundhouse, and a building formerly occupied by W. A. Hardy & Sons and the Union Coal Company. Large increase in manufacturing space is acquired. The Steam Engine Company's building is 39 x 120 ft., four stories, and the Hardy Building 20 x 75 ft., two stories. In addition there is an office building, engine house and sheds for storage. The company is adding modern machinery.

The Exeter Machine Works, Exeter, N. H., has decided to establish a department for the manufacture of commercial and semi-commercial motor cars. The machines are of new design. The business recently changed ownership and management, Joseph H. Symonds now being the controlling head. The standard lines are steam and hot water heating apparatus, blowers and exhausters.

The Gurney Heater Mfg. Company, Boston, Mass., manufacturer of heating boilers and other heating equipment, will not begin work on its new plant at South Framingham, Mass., until late in the year. Preliminary work on the site is now under way, including the foundations and a railroad siding. The plans for the buildings are not complete, but the works will be very much larger than those now operated at East Boston, which have a capacity of about 30 tons a day.

The Blanchard Machine Company, Cambridge, Mass., manufacturer of pulverizing and other machinery and general machine shop contract work, has taken the entire upper story of its building, the lease of a tenant having expired. This will give a very greatly increased manufacturing capacity. The building is 60 x 110 ft., with an ell about 60 x 60 ft., and two stories and basement. The equipping of the new space is now in progress. The company is rushed with business, particularly with contract work.

Milwaukee

MILWAUKEE, WIS., July 11, 1910.

Manufacturers, agencies and supply houses now have in hand a large number of inquiries, and bookings during the past week aggregate, in point of value, a very considerable amount.

One of the most significant features of the present state of trade lies in the fact that a greater percentage of orders than usual has been coming in recently, without previous negotiation other than requests for quotations, indicating that users are in urgent need of the machinery and have neither time nor inclination for bargaining or shopping around.

The character of business offering is also excellent. Much of it originates with industrial companies or public service corporations that have been long established and already have heavy investments made in properties scattered throughout the country. Some of these, that were compelled by the revival of business to make certain extensions or improvements, still delayed putting into effect various plans of a more comprehensive nature, which they had been considering, until financial conditions were unquestionably upon a sound basis. Now that the time for hesitation appears to be rapidly passing preparations are quietly in progress to proceed with the developments contemplated, and there is good authority for believing that this will have a very appreciable effect on the machinery market within the next few months. The feeling of unrest due to political causes seems to have almost entirely disappeared.

Railroad buying is cutting more of a figure in the market than has been commonly supposed. Machine tool manufacturers and dealers continue to be disappointed in the failure of certain expected purchases to materialize; but a great deal of equipment of a miscellaneous character, as well as castings, parts, fittings, track, switch and signal material, &c., is going out on single orders or season contracts placed by the different roads. Salesmen who have stuck pretty closely to this line of trade, undismayed by the pessimistic reports in general circulation, have, in spite of many failures, managed to turn in a very satisfying total

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of orders for each quarter. On the other hand, those who are easily discouraged or lack persistence have found consolation in other sources of business. More than one concern has secured good contracts from industrial railways, logging or mining roads, &c., whose trade it had not heretofore been accustomed to go after very strongly.

One line of railroad buying which is increasing in prominence concerns the installation of steel pressure cylinders, tanks, pumps, compressors, power units and other apparatus for tie and timber preserving plants. Even during the panic period such roads as the Pennsylvania and Santa Fe were busy with the construction of such plants, and numerous other lines are now preparing to follow the lead of the more progressive companies. Quite a number of private concerns for supplying treated ties, piling, poles, &c., have also been formed, and those previously established are strengthening their equipment. Two of the largest manufacturers here were pioneers in supplying this class of trade, and the majority of contracts thus far let has been placed in Milwaukee.

The International Steam Pump Company has been negotiating for the purchase of another plant here, and it is expected locally that the deal will be consummated, as it will give that company a line of product, long and favorably known throughout the world, which can be made to supplement very closely what it now has. The evident intention seems to be also to make Milwaukee one of the principal manufacturing centers for the company, which controls the Power & Mining Machinery Company, whose plant is in the suburb of Cudahy. The management of the latter, under Arthur Niedermeyer, gave it a degree of prestige in the mining, rock crushing and other fields which has borne fruit in the large amount of profitable business being done to-day, and the extensions to the Cudahy shops that are now in progress will afford facilities that are urgently required to take care of what is offering.

The Filer & Stowell Company, Milwaukee, is filling an order for machinery to be installed in the enlarged plant of the Crowell & Spencer Lumber Company, at Long Leaf, La., for which it has the complete contract.

The Downey & Kruse Company, Milwaukee, will install the steam heating plant in the new city hall at Kenosha, which is one of the most important contracts let in this vicinity for some time past.

A boiler plant, engine and dry-kiln will be installed by the Cream City Casket Company, Milwaukee, in connection with a two-story addition, 60 x 120 ft., now being made to its plant.

Plans are under consideration by the Brodesser Motor Truck Company, Milwaukee, for the erection of a plant at Juneau, Wis., to be used in the manufacture of commercial vehicles. The main building proposed will be 60 x 200 ft., of brick construction. Equipment can be largely furnished from the factory now operated in Milwaukee. A gas producer, gas engine, dynamo and electric motors will probably be installed.

L. M. Romer, formerly of Detroit, Mich., and Minneapolis, Minn., is establishing a machine shop for auto repairs and general service at Glenwood, Wis.

The plant of the Edgerton Wagon Company, Edgerton, Wis., is in readiness for the installation of machinery, purchase of which was deferred until the operating plans could be fully worked out. An engineer was recently engaged to plan the arrangement of the shops along the most modern lines, and the plant will be put in operation this summer.

The Globe Wire & Iron Works, Milwaukee, has recently taken a number of good contracts for structural material, including the iron work to be used in the new Farmers' & Merchants' State Bank Building.

Considerable mechanical equipment, including two water tube boilers of 250 hp. will be needed in consequence of additions to be made to the St. Agnes Convent and Hospital, Fond du Lac, Wis.

The Business Men's Association, Sheboygan, Wis., is trying to secure for that city the plant of the A. H. Andrews Company, manufacturer of furniture, whose present address is given as Chicago, Ill., where it is said to have experienced difficulty in obtaining room for necessary expansion. If this change takes place, it will mean the purchase of some new machinery, including probably a power set and electric motors.

A new steel frame factory addition, four stories, 100 x 115 ft., will be built in Racine, Wis., by the Horlick's Malted Milk Company. Plans have been completed and bids are now being taken.

The commercial interests of Merrill, Wis., represented by A. J. Stange, are endeavoring to secure the location there of a large stave factory now in operation at a point in Ohio.

A factory addition is being completed at Sheboygan, Wis., for the Columbia Shoe Company, and the heating plant is about to be installed.

Two boilers with a total capacity of 300 hp. will be furoperating machinery and power equipment for the new power plant of the Gem Hammock & Fly Net Company, Milwaukee.

The American Zinc Ore Separating Company, Platteville, Wis., is operating its plant to the full capacity, 24 hours of each day, and will make a heavy record for the season. Some enlargement of the works will probably be the result.

Reconstruction work to be done at the factory of the American Bedding Company, Superior, Wis., which recently suffered from fire, will necessitate the installation of some new mechanical equipment.

By the middle or latter part of August the Racine Iron & Wire Works will be able to place their large new plant, at Racine, Wis., in operation.

The National Brake & Electric Company, Milwaukee, has let the contract for structural work on its new machine shop and warehouse to the American Bridge Company.

The Northern Specialties Company, Phillips, Wis., has been incorporated for $200,000 and will establish a manufacturing plant.

Four steam boilers of 100 to 150 hp. each and feed water pumps will be purchased the latter part of this month by the Board of Water Commissioners at Wausau, Wis. Particulars can be obtained on application.

The Racine Gas Engine Company, Racine, Wis., has changed its name to the Racine Tool & Machinery Company, which more correctly designates the lines of manufacturing in which it is at present engaged. The plant additions recently mentioned will be begun in the near future. The growth of this company has been very rapid and of a most substantial character.

Plans are reported to be under consideration at Neillsville, Wis., for erecting a new manufacturing plant on the site of the buildings of the Reliable Furniture Mfg. Company, which were recently visited by fire. No definite announcement has, however, been made.

A new factory is about to be built at New Glarus, Wis., by the Helvetia Condensing Company, whose present headquarters are stated to be Highland, Ill.

It is announced by the Milwaukee Western Electric Railway Company, Milwaukee, that its line of 70 miles in length, from Milwaukee to Beaver Dam, will be built this year, and the erection begun in the near future of a power plant of 20,000 hp. at Hustisford, Wis.

The Frederick A. Little Engineering Company, Fond du Lac, Wis., which prepared the plans of the new plant for the Gardner Machine Company, Beloit, Wis., 100 x 200 ft., has also been given the general building contract.

The factory of the Christensen Mfg. Company, Reedsville, Wis., which was recently destroyed by fire, will be rebuilt. A temporary structure is being provided, which will enable the company to care for current business.

The municipal power and lighting plant at Waupun, Wis., which is equipped with Westinghouse generators, Ideal engines, a De Laval steam turbine unit and boilers of 300 hp., built in the shops of the S. Freeman & Sons Mfg. Company, Racine, Wis., will be remodeled and extended. Bids for the structural work made necessary by the proposed improvements are now being taken. Machinery requirements will be provided for a little later on.

The Worden-Allen Company, Milwaukee, has the contract for the structural work on an extension of the flooring factory of the John Schroeder Lumber Company.

The Heil Company, Milwaukee, will furnish the steel work for the new plant of the Kempsmith Mfg. Company.

A six-story addition, 80 x 120 ft., with new power plant, will be made to the factory of the Phœnix Knitting Works, Milwaukee. Machinery and other equipment, which includes a sprinkler system, will be purchased in the near future. The plans of the building and its arrangement are not yet complete.

The Sterling Engineering & Construction Company, Milwaukee, is completing a large new warehouse building here for its own use.

The Wisconsin Bridge & Iron Company, has been given the contract for the steel work of two new bridges to be erected for the Great Northern Railway in Minneapolis, Minn.

It is again reported from Beloit, Wis., that Fairbanks, Morse & Co. are planning the erection of a new brass foundry, but the firm advises that construction may not be undertaken before next year. No bids on structural work or equipment are being called for.

The Mineral Point Zinc Company, Mineral Point, Wis., has placed a contract with the Galena Iron Works Company, Galena, Ill., for extensive additions to be made to its present plant.

The Northern Boiler & Structural Iron Works, Appleton, Wis., has taken enough contracts during the present season to keep their plant very busy. The orders come not only from industrial establishments, but are also being executed for municipalities and counties in various parts of the State.

The plans of the Wisconsin Motor Mfg. Company, North

Mechanical and Civil Engineers,
PITTSBURGH, PA.

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Milwaukee, for its new plant in West Allis, Wis., include a main building 112 x 288 ft., with office 40 x 50 ft., and a separate power house 50 x 50 ft. Each structure will be of steel frame brick construction, with concrete foundation. A saw tooth roof will be put on the machine shop.

The Schwahn-Seyberth Company, Eau Claire, Wis., is completing plans for a new factory to be erected adjacent to the warehouse of the International Harvester Company. It will be used in the manufacture of saddlery.

A large plant will be built at Manawa, Wis., by the Evaporated Milk Company of New London, Wis.

New pumping machinery is to be installed by the city of Grand Rapids, Mich., and manufacturers here are figuring on the equipment, bids for which will be taken until June 21.

The business of the Northwestern Steel & Iron Works, Eau Claire, Wis., has been developing to such an extent this season that the enlarged facilities provided by new buildings some time ago are insufficient to meet the present requirements of trade. It is reported, on what appears to be reliable information, that an addition to the company's foundry, 80 x 200 ft., will be made this fall.

The O. O. Storle Valve Company, Kewaunee, Wis., is being dismantled and removed to Green Bay, Wis., where it is expected to be in active operation by August 1. The plant will consist of a machine shop, brass foundry and storage warehouse. W. J. Hess, who formerly owned a boiler works at Manitowoc, will be at the head of the company.

The C. A. Shaler Company, Waupun, Wis., manufacturer of electrical appliances, is about to erect a concrete factory building, the equipment of which will be operated by electric power with individual motors. The company is undecided at the present time, however, whether it will install a power plant or purchase its power from the city.

The Obenberger Drop Forge Company, Milwaukee, is contemplating the installation of steam hammers and other equipment, with the object of increasing its output.

Charles J. Anderson, proprietor of the Menominee Iron Works, Menominee, Wis., which was destroyed by fire June 17, advises that he is undecided whether he will rebuild his plant at Menominee or seek a new location. Any proposition extended to Mr. Anderson for the removal of his plant to a different location will be considered.

Plans are being drawn by Vaughan & Meyer, who recently opened an office as consulting engineers in the Majestic Building, Milwaukee, for an electric power station to be established at Rochester, Wis., by H. A. Russell. The latter has the contract for city lighting. The equipment will include a generator and water turbine.

A gasoline engine of 20 hp. and dynamo of 12½ kw., to be connected by belting, will be required for municipal service at Browntown, Wis. Bids are to be taken by the authorities until July 31.

The South

ATLANTA, GA., July 11, 1910.

Owing to the fact that climatic conditions here are so much more favorable at this time of the year than in most other cities of the South, local dealers have received a good many calls in person lately from people in need of machinery or supplies, and, in addition to single sales, some good season contracts have been closed. As a whole, however, trade in the majority of districts continues quiet, with more purchasing at the North than usual, owing to the number of manufacturers who are now at the various seaside resorts there within easy reach of Boston, New York and Philadelphia. This is particularly true of the textile interests and other enterprises that are financed largely with Northern capital.

Among the machine shops and foundries there is a great deal of activity manifested, and considerable repair work is offering. Some of the old, established plants, whose owners are widely acquainted, could, in fact, keep reasonably busy on this alone.

A new development company known as the Kentucky River Consolidated Coal Company, which was recently organized at Ashland, Ky., is expected to be in the market by or before fall for mining, coal handling, timber cutting, and planing mill machinery, as well as power and electrical equipment. Among the incorporators is J. W. M. Stewart of Ashland, Ky.

The authorities at Lafayette, Ga., recently engaged J. B. McCrary & Co., Atlanta, to prepare plans for a municipal electric power and lighting station, the machinery for which will be purchased as soon as specifications are ready.

Construction is now in progress of a new building, including machine shop for repair work, to be erected by the Athens Electric Railway Company, Athens, Ga.

The American Casting Company, Birmingham, Ala., has been making heavy shipments this season of cast iron culvert pipe, which it manufactures with a special lock joint, in light, short lengths, that are easy to handle and give a maximum of resistance to pressure.

Some additional equipment will be needed for the municipal power plant at Dalton, Ga., which now has an electrical output of 100 kw. The extent and character of the improvements to be made will be determined after the consideration of a report to be made by engineers which the city has engaged for this purpose.

The Casey-Hedges Company, Chattanooga, Tenn., will supply four 72 in. by 18 ft. high pressure boilers for the new plant of the Crowell & Spencer Company, at Long Leaf, La.

Some new machinery will be installed this year by the Smith-McGowen Company in its plant at Magazine, Ala., and other improvements effected.

Electric power will be provided, either through the erection of its own generating station or otherwise, for the Holston Valley Railway, Bristol, Tenn., which is to be converted into a traction line.

Boilers are being installed in the new plant of the Osceola Lumber Company, at Kissimmee, Fla., where the operating machinery has already been placed, and it will be put in service shortly. Later on some additional equipment will be needed.

Some contracts have been made and others will be awarded during the summer for the construction of the hydroelectric plant which is to serve the city of Bedford, Va. Equipment for the generating station has not yet been purchased.

The Ross-Meehan Foundry Company, Chattanooga, Tenn., is making a feature of railroad castings, the demand for which this season has been fairly good. It is prepared to turn out on short notice any work molded from the standard patterns prescribed by the Master Car Builders' Association.

A new manufacturing plant with the most modern machinery is being completed at Victory, Ga., by the Ficklin Spoke & Handle Company, which will be a good future buyer of mechanical equipment of various kinds.

A new foundry and machine shops are under construction for C. B. Rice, Garyville, La., who expects to have them in operation early in September.

The municipal authorities of Bedford City, Va., have arranged for the construction of a hydroelectric plant on the James River, near Big Island, in addition to a transmission line of about 25 miles, to convey power to Bedford City. A $100,000 bond issue has been voted to cover the necessary expenses. Francis R. Weller, Hibbs Building, Washington, D. C., is the engineer in charge.

The Altavista Cotton Mill, incorporated with a capital of $300,000, will build a two-story plant, 125 x 300 ft., at Altavista, Va. The mill will contain 13,000 spindles and 300 looms, and it will be equipped with modern machinery. In addition to erecting a plant, the company will build 50 cottages to accommodate its employees. A. T. Hutcheson, Charlotte, N. C., is the president and treasurer of the company.

Starke's Dixie Plow Works, Richmond, Va., which has been manufacturing plows and castings for more than 60 years under the ownership and control of one family, has recently been incorporated, but the ownership and management will remain as before. The incorporation was found necessary because of business growth, and the company may in the future extend its line of manufacture.

The Alexandria Lumber Company, Ltd., Alexandria, La., will shortly purchase machine tool parts and repairs.

The American Portable Band Saw Mill Company, Winston-Salem, N. C., which owns patents covering a new style of band saw, is negotiating with manufacturers with a view to having its product made under contract. The company has been formed as a selling organization and will concentrate on marketing its product.

The Southwest

KANSAS CITY, MO., July 11, 1910.

Thus far this month only the most necessary buying has been done, and dealers are getting the bulk of the trade. Representatives of manufacturers are either taking vacations or sticking pretty closely to inside work. At any rate, they are not much in evidence on the outside. Conditions for traveling have been well-nigh intolerable, owing to the heat and drought, and on the part of prospect customers there is very little disposition to go into the details of future requirements. Hence a mail order business covering only standard apparatus or supplies is the result.

For the further Southwest the extreme heat of the summer has had rather a stimulating effect on some branches of trade, for the reason that many owners and superintendents of mines, smelters, irrigation projects, electric plants, &c., have gone East, accompanied by salesmen in the employ

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of machinery builders, to inspect equipment at the shops and close contracts which have been pending. The amount of business transacted in this way is already considerable and will very materially strengthen the record of the month.

Preparations are being made by F. Wolffe, 507 East Eighteenth street, Kansas City, to erect a two-story woodworking plant, 25 x 80 ft.

New roundhouses, furnished with tools for emergency repair work, will be built in the near future by the Atchison, Topeka & Santa Fe Railway at three points in New Mexico along its lines.

Equipment which includes a gasoline-engine-driven hoist and drilling machinery will be required for the property of the Sunset Mining & Smelting Company, Albuquerque, N. M.

The Braeckel Concentrator Company, Joplin, Mo., in consequence of the demand for its apparatus, will be obliged to provide for enlarged manufacturing facilities.

Advices from Corpus Christi, Texas, are to the effect that an engine-driven or steam turbine power plant of 300 kw. will be built there in the near future by the Corpus Christi & Interurban Railway of that place, which now buys current under a yearly contract from the Corpus Christi Ice & Electric Company.

The Missouri Valley Bridge & Iron Company, Leavenworth, Kan., in addition to its standard line of fabricating work and bridge construction, is making a specialty of steel tanks for railroad service, water works and industrial plants.

The new generating station of the Galveston & Houston Interurban Railway Company, Houston, Texas, which will be located at Webster, Texas, will have for its initial equipment three horizontal return tubular boilers of 1800 hp. and two steam turbine units, with condensers, heaters, pumps, switchboards and other auxiliary apparatus, some of which has already been contracted for. There will also be three substations equipped with power transformers and motor generator sets.

The Woodruff-Kroy Company, which has been operating a large barrel factory at Davenport, Iowa, will build a plant at Marked Tree, Ark., and remove the necessary machinery to that point, according to a report from the latter place which appears to be authentic.

The El Paso, Texas, office of the Ingersoll-Rand Company is having a very busy time this summer estimating on air compressor outfits, drills, cutters, &c., for use in the mining districts of Arizona, New Mexico and the States across the border. The activity all through that part of the United States and Mexico is very pronounced.

The Dilley Foundry Company, Pine Bluff, Ark., has had an excellent run of business during the spring and early summer in sawmill and power machinery, general castings, &c., and of late there has been much repair work to be done on logging locomotives.

The construction of a pumping plant for city water service is under consideration at Blytheville, Ark.

The Empire District Electric Company, Joplin, Mo., is preparing to build a power transformer station at Carthage, Mo., and supply electric current from its 2000 kw. hydroelectric plant at Lowell, Kan., to operate motors used in industrial enterprises, including the quarries.

The installation of an electric power and pumping plant will be undertaken in the near future at Wetumka, Okla. Machinery is reported to have been purchased.

Griffin & Co., Walker, Ariz., are reported to have decided upon the purchase of an electric hoist and crushing plant equipped with gravity stamps.

The E. C. Wehrfritz Machinery Company, Little Rock, Ark., has recently had a rush of orders for repair parts, indicating that many plants of that vicinity are being put in condition for expected heavy runs.

A three-story plant for the manufacture of wagons and carriages will be built this summer at Houston, Texas, by Frank Eller.

It is expected that machinery will be purchased in the late summer or early fall for water works at Conway, Ark.

A power and pumping station for public service is to be erected at Foraker, Okla., as soon as the necessary arrangements can be made by the town authorities.

From Mission, Texas, it is reported that the Minneapolis Steel & Machinery Company, of Minneapolis, Minn., is figuring with the city on the installation of a combined electric power and refrigeration plant.

J. F. McIntyre & Sons are installing in their new plant at Pine Bluff, Ark., a battery of boilers and a Corliss engine to develop 200 hp. or more, together with operating machinery.

An electric generator of 150 kw., driven by a gas engine of corresponding capacity, will be placed in service within the coming month at the power plant of the Kansas City, Lawrence & Topeka Electric Railway in Endora, Kan. Other units will be added later on.

At Mulvane, Kan., a bond issue is proposed for the construction of a pumping station.

The F. E. Newberry Electric Company, St. Louis, Mo., has been awarded the contract for the complete electric power and lighting station to be installed at the army post, Fort Crockett, Tex.

A proposition has been submitted to the Commercial Club of Corpus Christi, Texas, by C. J. Stanzell and associates of Schulenberg, Texas, with a view to locating a foundry and machine shop at that place, which will probably be accepted within a week or ten days.

The city of Canton, Kan., has voted bonds in the sum of $30,000 for the construction of an electric light plant and water works system.

Peet Brothers Mfg. Company, Kansas City, Kan., has commenced work on its new plant, which will consist of a manufacturing building 150 x 265 ft., refinery and power building, 75 x 250 ft., steam plant 50 x 100 ft. and an office building 40 x 100 ft. The buildings, together with machinery and equipment to be installed will cost about $300,000. It is expected the plant will be ready for operation by October 1.

The Northwest

ST. PAUL, MINN., July 11, 1910

Manufacturers and dealers who have been interviewed lately are almost unanimous in stating that they are satisfied with present conditions, and look for further development of trade as the summer lengthens, particularly with the near approach of autumn. If this proves true the prediction made some time ago that the present year will be the best from the industrial standpoint that the Northwest has ever had will be abundantly justified. An excellent index of the situation is the growing demand for contractors' equipment, more of which has been ordered within the past few weeks, to judge from reports made by representative houses, than during any similar period of the preceding three or four years taken together. Repairs and spare parts are also much wanted. Considering the fact that heavy purchases were made early in the spring and all existing equipment put in first-class operating condition, the present urgent demand is an evidence of building and development work which is putting severe wear upon machinery in service, as well as taxing its capacity.

The new warehouse to be erected in Minneapolis, Minn., by the Great Northern Implement Company will be 120 x 155 ft., of structural iron and brick construction with composition roofing.

Equipment for a water works system may be required this fall at Kendrick, Idaho, where plans are under consideration. If pumps are installed the contract will probably be placed here.

The Youngstown Iron & Steel Roofing Company, which is represented in Minneapolis by H. V. Fleck & Co., is finding an excellent market in the Northwest for its various products, including both black and galvanized iron and steel sheets, roofing, siding, flooring, metal lath, &c. The extent of building operations has given an impetus to this class of trade which will carry it well along into the fall, even if new business should become scarce, which is not at present the case.

The Minneapolis Steel & Machinery Company, Minneapolis, has been awarded the contract for erecting the new factory of the Linderman Box & Veneer Company, Eau Claire, Wis., which will be 90 x 240 ft.

The Dakota Power Company, Rapid City, S. D., whose purchase of electric generating units has previously been reported, recently placed a contract with the Northwestern representatives of Allis-Chalmers Company, Milwaukee, for the remainder of its power plant and substation machinery, including large transformers.

The steam and hydroelectric plants acquired in Grand Forks, N. D., and vicinity by H. M. Byllesby & Co., Chicago, Ill., as recently mentioned, have been consolidated under the name of the Red River Power Company, Grand Forks, which will proceed at once to make important improvements, including the installation of some new machinery and the rearrangement of existing equipment.

The Mineral Hill Mining Company will shortly install at its property near Lead, S. D., a battery of steam boilers, hoisting engine and other machinery for development work. All of the equipment required at present has been contracted for, but more will be needed later.

The St. Paul Foundry Company, St. Paul, will furnish the structural iron and steel for a building, to be erected at Brainerd, Minn., by the Brainerd Improvement Company.

Electric generating machinery and other equipment will be purchased shortly for the new municipal electric power station at Aurora, Minn.

The Twin City Bridge Company, Minneapolis, has been awarded the contract for a new bridge, to be erected for the town of Daniels, Burnett County, Wis.

A triple expansion pumping engine or motor driven

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centrifugal pumps of 20,000,000 to 30,000,000 gal. daily capacity will probably be purchased by the city of Minneapolis in the near future to reinforce its water supply system. Plans for needed improvements are now under consideration by the authorities.

A concentrating plant is to be built in the near future and considerable ore reduction machinery installed by the Marsh Mining Company, operating near Burke, Idaho, of which C. L. Colwell, Missoula, Mont., is president. Electric power is now used, and a motor driven hoist, as well as compressor, drills, &c., was recently installed.

A large sum has been appropriated at Cloquet, Minn., for the improvement of the local water works system, a portion of which will be devoted to the purchase of new pumping machinery. An elevated steel storage tank may also be required.

The National Briquetting Company is reliably reported to have decided definitely upon plans for the erection of a plant at Kenmare, N. D., but no construction work will be undertaken before early fall.

The Eagle Iron Works Company, Minneapolis, whose incorporation was recently noted, will enter upon the fall trade with considerably enlarged facilities.

The Kooskia Land & Power Company, Kooskia, Idaho, having received permission from the Interior Department to erect a power dam on the Clearwater River in what is now a national forest, will proceed to build a hydroelectric plant of 4500 to 5000 kw., upon the completion of which a number of industrial enterprises will be established.

M. A. Snyder, Cul de Sac, Idaho, will install machinery in a large new saw mill, which he is planning to build in the vicinity of Chesley, Idaho.

The Security Bridge Company, Minneapolis, has been awarded the contract by the authorities at Lewiston, Mont., for constructing a steel bridge over one of the rivers in that vicinity.

The municipal electric power plant at Granite Falls, Minn., which is equipped with hydroelectric machinery and a small reserve steam unit, will probably be added to this summer. Vote on a bond issue for the purpose is about to be taken.

A. Y. Bayne & Co., Minneapolis, have been awarded the contract for the new steel arch bridge to be erected across the St. Croix River, at Taylor's Falls, Minn., the plans for which were drawn by L. P. Wolff, Minneapolis, whose office is in the Essex Building.

Machinery for an ore reduction plant will be required this season by the Ivanhoe Mines Company, McAllister, Mont.

It is reported from Bismarck, N. D., that the Hughes Electric Company, which operates the central power station there, is now arranging to place boilers, with mechanical stoker furnaces, a cross compound engine of 800 hp. and an electric generator of corresponding capacity in a new plant which it has under erection.

New machinery has been ordered by the Deadwood Gas Company to replace equipment which was recently destroyed by fire.

Fairbanks, Morse & Co., through the representatives connected with the Minneapolis office, have handled a large share of the machinery included in their several lines which has been required for service in Minnesota, North and South Dakota and Montana. One feature in relation to which the writer has heard considerable appreciation expressed by users is the pains taken by this concern to insure satisfactory operation of the machinery after it has been installed, the result being a good many repeat orders.

A 25-ft. addition, to be used as a machine shop for repair work, will be made to the building occupied by the Russell Motor Company, Duluth, Minn.

The Russell Grader Mfg. Company, Minneapolis, Minn., manufacturer of road building machinery, has purchased a site and is having plans prepared for a brick factory building, 80 x 200 ft., two stories and basement, work upon which will be pushed as fast as possible.

The Crittenden Roofing & Mfg. Company, Minneapolis, Minn., is erecting a two-story and basement store and manufacturing building, and will purchase heating plant, power presses and shears and power brakes for metal window work.

The Farther Central West

OMAHA, NEB., June 11, 1910.

For the past week there has not been much life to the market. The travelling salesmen for Eastern houses, who make this city their headquarters, have been able to do very little business and they do not appear to be making much of an effort. From Denver and Salt Lake City a greater degree of activity is reported, as the mines, concentrating plants and smelters are installing or planning the addition of considerable new machinery, and in the vicinity of Lead, S. D., a similar condition exists. At Pueblo there is talk of improvements to be made in various properties of the Colorado Iron & Fuel Company, among them being the placing of a large Corliss engine and other power equipment at Berwind; and some large projects are also about to be undertaken by public service corporations in southern and western Colorado. Among the shops, foundries and general manufacturing establishments of Iowa and Nebraska there is temporary quiet. They are all busy, but not much is heard from them.

The Chicago & Northwestern Railway Company, through its industrial department at Chicago, Ill., is endeavoring to interest manufacturers and investors of other sections in the opportunities for the profitable location of machine shops, foundries, factories and mills at various points in the territory west of the Mississippi River traversed by its lines. There has been considerable development in that direction recently, and for repair work, especially, users of machinery do not need to send East nearly as often as formerly.

The Waterloo Malleable Iron Works, Waterloo, Iowa, which has made a specialty of fireproof pattern vaults, are gradually extending their trade in this line, the importance of which is coming to be recognized more and more among Western manufacturers and owners of jobbing foundries, particularly where there are intricate or otherwise valuable patterns to be handled.

The Frontenac Mining Company, Ltd., Central City, Colo., will install machinery this year for a 200-ton concentrating plant and make other improvements.

An air compressor and drills are being added to the equipment of the Wanakah Mining Company, Ouray, Colo., which will be in the market for machinery and supplies at intervals as the work on its property progresses.

The city officials at Carbondale, Colo., will proceed at once to carry into execution plans for a municipal water works system, the construction of which has been authorized.

The city of Indianola, Iowa, is about to purchase a Corliss engine of 200 hp., to be direct coupled to a continuous current electric generator of 150 kw. for the municipal lighting plant. This is at present furnished with four Fort Wayne generators, having a combined rating of 300 kw., driven by engines built in the shops of the Murray Iron Works Company, Burlington, Iowa.

The Pandora Mining & Milling Company, Pitkin, Colo., is arranging for the installation of an air compressor and other equipment.

The J. Geo. Leyner Engineering Works Company, Littleton, Colo., is putting out a complete line of hammer drills, sharpeners, compressors and other apparatus for mining work, the demand for which is improving steadily in this section of the country. The management has in its possession some very interesting figures, obtained from users of its drills, showing expenses in detail for operation and repairs during specified periods.

From Janesville, Iowa, it is reported that the Royer-Myers Manufacturing Company has been organized there with a working capital of $25,000, to engage in the manufacture of gasoline engines, concrete mixers and tile machines. Preliminary plans have been made for a factory building 40 x 100 ft., so constructed as to be capable of extension as the business develops. Electric power will probably be used.

A decision will probably be reached this summer at Carson, Iowa, to build a city pumping plant and install water works.

A power plant will be built and electric generating machinery installed in the near future by the Granite Tunnel Company, Granite, Colo.

The Wm. Graver Tank Works, which has offices in the Newhouse Building at Salt Lake City, have taken some excellent contracts this year at various points in the intermountain territory for tanks, penstocks and steel plate work, the need for which has been heavier, of late, than for some time past. The company's shops are in East Chicago, Ind.

The Carribeau Mining Company, Ophir, Colo., has provided for the installation of an air compressor.

A new electrically operated plant, 80 x 185 ft., three and four stories, will be built at Dubuque, Iowa, by the Dubuque Packing Company.

The Des Moines Bridge & Iron Works, Des Moines, Iowa, has been awarded the complete contract for improvements in the water works system at Dows, Iowa.

Suction gas producers and tandem gas engines are now being handled by the Intermountain Machinery Company, Salt Lake City, Utah, which finds that the demand for this type of power plant equipment is rapidly growing all through the mining districts, as well as for industrial service and central stations.

The operations of the Dragon Iron Mining Company, Silver City, Utah, which now has an output of 200 tons daily, will be considerably extended during the latter part of the year, necessitating the purchase, in due course, of additional equipment. The main shaft will be sunk to a depth of 1000 ft. or more, being now down over half that distance.

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The North Pacific Coast

SEATTLE, WASH., June 9, 1910.

It is becoming more apparent, from one week to another, that there will be a great deal of buying in the near future for the account of large public service and industrial corporations that have been deferring new projects and improvements for the past three years until business conditions should become settled upon a substantial basis. But for threatening labor difficulties the renewed buying movement that is now expected would have developed sooner. Municipal power and pumping plants, incinerators, crushing plants, &c., will also call for considerable machinery, and the almost universal disposition seems to be to award contracts to local manufacturers just as far as possible, thereby helping to build up the industries of the Coast. In other lines a fairly steady trade is being maintained, with the volume as heavy as could be expected under existing circumstances.

The Nordeen Iron Works, Everett, Wash., has arranged to manufacture and sell sufficient of the products of the Hanchett Hot Blast Grate Company, Big Rapids, Mich., to supply the trade on the Pacific Coast.

The construction of an incinerator plant is proposed at Tacoma, Wash., and the matter of a bond issue to provide funds for the purpose will be decided in the near future.

Machinery will be required shortly by the Newell Mill Company, Seattle, for a new planing mill 50 x 100 ft. to be added to its plant.

At Wardner, Idaho, The Sampson Mining & Development Company is reported to be provided for the installation of an engine hoist and air compressor.

The Nelson Iron Works, Nelson, B. C., has secured the business of the Rossland Engineering Works, Rossland, B. C., and will continue to carry on the trade which has been developed by that company.

An ore reduction plant is to be installed at Sumpter, Ore., by the Columbia Gold Mining Company, of that place.

Additions have been made to the machinery of the Glendale Lumber Company, Glendale, Ore., which materially increase its capacity, and some further equipment will be needed later on.

A gasoline engine-driven air compressor has just been installed by the Pacific Copper Mining Company, Chewelah, Wash., which will require some additional machinery when the development work now in progress is farther along.

A new Corliss engine of 450 to 500 hp. will be put in service this month by the Nelson-Johanson Company, Tacoma, Wash., together with auxiliary machinery.

Arrangements have been made by the Big Baldy Mining & Milling Company, Concord, Idaho, to install a hoist and air compressor. Some additional equipment will be needed later.

Reservoirs will be built and steam-driven pumps provided for water supply service at Fort Ward, Wash. The complete contract was recently let.

A new high pressure boiler 72 in. x 18 ft. is being added to the power equipment of the Hazel Mill Company, Blanchard, Wash.

The Phœnix Iron Works, Portland, Ore., has been awarded by the city the contract for supply steel gates and valves for the Mount Tabor reservoir system of the West Side water works.

The Vancouver Power Company, now under the control of the British Columbia Electric Railway Company, Vancouver, B. C., which operates a hydroelectric plant of 25,000 kw., driven from wheels built by the Pelton Water Wheel Company and the Abner Doble Company of San Francisco, Cal., is about to proceed with plans which contemplate the development of sufficient electric energy to quadruple that capacity.

Plans were recently made by the Eureka Development Company, Ltd., Hailey, Idaho, for an electric power plant to supply current for motors used in driving mining machinery.

The Coast Iron & Machine Works, Tacoma, Wash., now have their plant well equipped and will henceforth be an important factor in the metal working industry of this section.

Government Purchases

WASHINGTON, D. C., July 12, 1910.

The Bureau of Supplies and Accounts, Navy Department, will open bids July 26, under schedule 2709, for 24 differential blocks and a miscellaneous lot of machine screws, and on August 16, under schedule 2702, for one hobbing auto gear machine.

The Isthmian Canal Commission will open bids August 5, under circular 595, for pumps and fittings and for locomotive and truck springs.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids July 5 for the following:

Class 111.—Eight 12-hp. automatic starting oil engines—Bidder 79, August Mietz, New York, $1875.

Class 121.—Two complete sets of propelling machinery—Bidder 39, Ferro Machinery & Foundry Company, Cleveland, Ohio, $385; 44, Fulton Mfg. Company, Erie, Pa., $428.61; 52, Gas Engine & Power Company and Charles Seabury & Co., Morris Heights, N. Y., $650; 96, Progressive Mfg. Company, Torrington, Conn., $550.

Class 143.—Five sets of standard drill sets and 27 dozen twist drills—Bidder 22, Coggins & Owens, Baltimore, Md., $460.47; 67, J. B. Kendall Company, Washington, D. C., $191.51; 78, Montgomery & Co., New York, $163.95; 83, Manhattan Supply Company, New York, $186.61; 106, Rawles-Cobb Company, Boston, Mass., $120; 120, R. B. Sherman, New York, $178.70.

The Mechanical Engineers' English Meeting

Features of the Meeting and Those Who Will Attend

The joint summer meeting of the Institution of Mechanical Engineers and the American Society of Mechanical Engineers will be held in Birmingham and London, England, July 25 to 30. The members of the American Society and the ladies accompanying them will be the guests of the Birmingham Reception Committee at the excursions and entertainments in the Midlands and of the Institution at the London gatherings. The following papers will be presented at the Birmingham sessions:

"English Running-Shed Practice," by Cecil W. Paget, Derby, member I. Mech. E.

"Roundhouse Practice, or the Handling of Locomotives at Terminals to Secure Continuous Operation," by Frank H. Clark, Chicago.

"Handling of Locomotives at Terminals," by Frederick M. Whyte, New York, vice-president A. S. M. E.

"Handling Locomotives," by Henry H. Vaughan, Montreal, member I. Mech. E. and A. S. M. E.

"American Locomotive Terminals," by William Forsyth, Chicago, member A. S. M. E.

"High-Speed Tools and Machines to Fit Them," by H. I. Brackenbury, Newcastle-upon-Tyne, member I. Mech. E.

Report of the Committee of the A. S. M. E. on Standard for Involute Gears.

At the London meetings the following papers will be presented:

"Electrification of Suburban Railways," by F. W. Carter, Rugby.

"Cost of Electrically Propelled Suburban Trains," by H. M. Hobart, London.

"Economics of Railway Electrification," by William B. Potter, Schenectady, N. Y., member A. S. M. E.

"Electrification of Trunk Lines," by L. R. Pomeroy, New York, member A. S. M. E.

"Electrification of Railways," by George Westinghouse, Pittsburgh, president A. S. M. E.

Very many attractive excursions and entertainments have been provided for in both of the English cities, including visits to various works and to places of historic or general interest. The evening affairs will include a garden fete in the Botanical Gardens, Edgbaston, by invitation of the Birmingham Reception Committee, July 26; reception in the Council House, by invitation of the Right Hon. The Lord Mayor of Birmingham, Alderman W. H. Bowater and The Lady Mayoress, July 27; a conversazione in the Institution House, Storey's Gate, St. James's Park, London, by invitation of the President and Council of the Institution, July 28, and the Institution dinner in the Connaught Rooms, Freemason's Hall, London, July 29.

For the American Society the General Committee of Arrangements consists of Ambrose Swasey, chairman; Charles Whiting Baker, vice-chairman; George M. Brill, Prof. W. F. M. Goss and John R. Freeman; ex-officio, George Westinghouse, president; William H. Wiley, treasurer; Prof. F. R. Hutton, honorary secretary; Willis H. Hall, chairman Meetings Committee,

and Calvin W. Rice, secretary. The subcommittees are as follows: Entertainment—George M. Brill, chairman; John W. Upp, George A. Orrok, Mrs. George M. Brill, Mrs. F. R. Hutton and Mrs. Jesse M. Smith; Printing and Publication—Prof. F. R. Hutton and F. R. Low; Reception—Prof. W. F. M. Goss, chairman; L. D. Burlingham, H. R. Cobleigh, William C. Dart, James M. Dodge, H. L. Gantt, A. M. Greene, Jr., Prof. F. R. Hutton, C. T. Plunkett, F. H. Stillman and Worcester R. Warner; Transportation—Charles Whiting Baker and Calvin W. Rice; and Finance—William H. Wiley.

Altogether there are expected to be 241 members and guests of the American Society in attendance. Of this number 89 gentlemen and 53 ladies will sail on the official steamship, the Celtic, July 16. Those going by other routes or now in Europe include 71 gentlemen and 28 ladies. Following are lists of the gentlemen who will be present at the meeting. The names prefixed with an asterisk (*) indicate those who will be accompanied by ladies.

Sailing on the Celtic, July 16, 1910

Aldrich, John G., Providence, R. I.
*Alford, L. P., New York.
Baldwin, Abram T., Detroit, Mich.
Barnes, Howel H., Jr., New York.
*Bovin, Sydney Walden, New York.
Boyd, H. C., New York.
*Brill, George M., Chicago, Ill.
Brill, Elliot M., Chicago, Ill.
Brill, G. Meredith, Chicago, Ill.
Brooks, J. Ansel, Providence, R. I.
Bump, Burton N., Syracuse, N. Y.
*Burlingame, L. D., Providence, R. I.
*Bursley, Jos. A., Ann Arbor, Mich.
*Calder, John, Ilion, N. Y.
Camp, Geo. E., Utica, N. Y.
Chester, John N., Pittsburgh, Pa.
Clarke, S. W. E., New York.
Cobleigh, H. R., New York.
Colwell, Augustus W., Columbus, Ohio.
*Corbett, Charles H., Brooklyn, N. Y.
Dart, Wm. C., Providence, R. I.
*Davis, Chas. Ethan, Muncie, Ind.
Dean, F. W., Boston, Mass.
*Dodge, James M., past president, Philadelphia, Pa.
Dodge, Karl, Philadelphia, Pa.
*Durfree, Walter C., South Boston, Mass.
*Freeman, John R., past president, Providence, R. I.
Galloupe, Francis E., Boston, Mass.
Galloupe, Chauncy Adams, Boston, Mass.
*Gantt, H. L., manager, New York.
*Goss, W. F. M., vice-president, Urbana, Ill.
*Greene, Arthur M., Jr., Troy, N. Y.
*Hartness, James, manager, Springfield, Vt.
Hallenbeck, Geo. E., Toledo, Ohio.
Hamilton, Chester B., Jr., Toronto, Can.
*Higgins, C. P., Roselle, N. J.
Honsberg, August A., Cleveland, Ohio.
*Hutton, F. R., past president, honorary secretary, New York.
*Johnson, A. L., Muncie, Ind.
*Keep, W. J., Detroit, Mich.
*Klepinger, J. H., Great Falls, Mont.
Klock, Frank B., Syracuse, N. Y.
Latham, H. M., Worcester, Mass.
*Leland, Henry M., Detroit, Mich.
Lewis, Wilfred, Philadelphia, Pa.
*Lodge, William, Cincinnati, Ohio.
*Low, F. R., New York.
McCreery, J. H., New York.
*Main, Charles T., Boston, Mass.
Main, Theodore, Boston, Mass.
Marburg, L. C., New York.
Miller, Spencer, Jr., New York.
Miller, Spencer, New York.
*Moore, S. L., Elizabeth, N. J.
*Morrin, Thos., San Francisco, Cal.
Nelson, James W., New York.
*O'Neil, J. G., Chicago, Ill.
Orrok, Geo. A., New York.
*Parson, Charles H., New York.
Plunkett, Charles T., Adams, Mass.
Plunkett, Chas. T., Jr., Adams, Mass.
*Reed, E. Howard, Worcester, Mass.
Reid, Joseph, Oil City, Pa.
Remick, H. E., Boston, Mass.
Rice, Calvin W., secretary, New York.
Richmond, Knight C., Providence, R. I.
Roe, J. W., New Haven, Conn.
*Sague, J. E., Albany, N. Y.
Sanford, Geo. R., Syracuse, N. Y.
*Smith, A. Parker, New York.
*Smith, Augustus, New York.
*Smith, Jesse M., past president, New York.
*Smith, Oberlin, past president, Bridgeton, N. J.
*Stillman, F. H., New York.
*Struckman, N. H., St. Louis, Mo.
*Swasey, Ambrose, past president, Cleveland, Ohio.
Thompson, B. L., Syracuse, N. Y.
*Thurston, Edw. D., Jr., New York.
Turner, Charles P., New York.
*Upp, John W., Schenectady, N. Y.
Upp, John W., Jr., Schenectady, N. Y.
Waldo, Leonard, New York.
*Warner, Worcester R., past president, Cleveland, Ohio
Watson, William, Boston, Mass.
*Wells, F. C., Greenfield, Mass.
*Wheeler, Seth, Albany, N. Y.
*Wiley, Wm. H., treasurer, New York.
York, L. D., Portsmouth, Ohio.
York, Robert, Memphis, Tenn.

Going by Other Routes or Now in Europe

Adams, E. T., Milwaukee, Wis.
Adamson, Daniel, Clyde, Cheshire, England.
*Baker, Chas. Whiting, vice-president, New York.
Baker, J. Wheeler, New York.
*Baldwin, Wm. J., New York.
Bates, Edward P., Syracuse, N. Y.
*Bauer, Charles L., Springfield, Ohio.
Bell, James R., Kent, England.
Benet, Laurence V., Paris, France.
Bonner, Wm. T., New Britain, Conn.
Christie, A. G., Madison, Wis.
*Clark, Frank Henry, Chicago, Ill.
*Cooke, Thomas F., Buffalo, N. Y.
*Crawford, D. F., Pittsburgh, Pa.
Cromwell, J. C., Cleveland, Ohio.
Cullingworth, George R., New York.
Dietz, Carl F., Boston, Mass.
Dixon, W. F., Moscow, Russia.
Eynon, Thomas M., Philadelphia, Pa.
Ferris, Chas. E., Knoxville, Tenn.
Foster, E. H., New York.
Francis, Harry C., Philadelphia, Pa.
Fry, Lawford H., Paris, France.
*Garratt, E. A., London, England.
*Hall, Willis E., chairman Meetings Committee, New York.
*Hanson, George, Sterling, Ill.
Hart, Howard S., New Britain, Conn.
Heap, Douglas T., Kent, England.
Hering, Rudolph, New York.
*Hess, Henry, Philadelphia, Pa.
Hess, H. Lawrence, Philadelphia, Pa.
Hillyer, George, Jr., Atlanta, Ga.
Holloway, Thurman Welford, London, England.
Katzenstein, Martin L., New York.
Kirchhoff, Charles, New York.
Kothny, G. L., Manchester, England.
Kroto, G., London, England.
Lee, F. V. T., San Francisco, Cal.
Lewis, W. Yorath, London, England.
Longstreth, Charles, Philadelphia, Pa.
McCreery, J. Harold, New York.
*Marks, L. S., Cambridge, Mass.
*Marshall, Wm. C., New Haven, Conn.
Mathot, R. E., Brussels, Belgium.
Mesta, George, Pittsburgh, Pa.
*Meier, E. D., vice-president, New York.
Mix, E. W., Paris, France.
Moeton, George W., Wilmington, Del.
*Morgan, L. H., Cheshire, England.
Otto, Henry S., Paris, France.
Park, F. A., Clydebank, Scotland.
Parish, W. F., Hamburg, Germany.
*Pulman, Thos. C., London, England.
Reid, John S., Chicago, Ill.
Richards, Chas. R., New York.
Ripsch, G. W., Dayton, Ohio.
Rogers, W. S., Bantam, Conn.
*Sancton, E. K., Kent, England.
*Scott, Arthur C., London, England.
*Sinclair, Angus, New York.
Smith, Alton L., Worcester, Mass.
*Taylor, Frank H., London, England.
*Taylor, Fredk. W., past president, Philadelphia, Pa.
Thuman, F., London, England.
Thurston, Geo. H., Johannesburg, So. Africa.
Trube, G. A., Manchester, England.
*Vander Willigen, T. A., Brussels, Belgium.
Vernon, P. V., Coventry, England.
Westinghouse, H. H., New York.
Willhofft, F. O., Kingston, Canada.

The first partial account of C. C. Murray, receiver of the Shenango Iron & Steel Company, Wheatland, Pa., presented to the federal district court at Pittsburgh, shows assets, exclusive of real estate, aggregating $35,261.

Personal

W. E. Corey returned from Europe this week.

Alba Johnson, vice-president of the Baldwin Locotive Works, Philadelphia, sailed June 26 for a two onths' vacation abroad.

J. M. Lewis, formerly assistant purchasing agent of e Link-Belt Company, has been appointed purchasing ent of the Philadelphia Textile Machinery Company, hiladelphia.

Frank W. Highberger, formerly of Frank W. Highrger & Co., is now connected with Edmund W. udge & Co., Frick Building, Pittsburgh, in the coke d pig iron sales department.

John C. Greenway has resigned as superintendent the Coleraine district, Mesaba range mines, of the liver Iron Mining Company to become manager of the pperia & Pittsburgh and Calumet & Arizona copper ines in the Bisbee, Ariz., district. The employees at e Coleraine properties presented him with a silver rvice.

H. S. White has been appointed sales manager of the etroit Seamless Tubes Company, Detroit, Mich.

Jos. W. Heffer, who has been connected with the epublic Iron Works, Pittsburgh, for 20 years, goes outh July 20 to take charge of the office of the Shelby on Company, Shelby, Ala.

David Van Alstyne, the newly elected vice-president the Allis-Chalmers Company, Milwaukee, who will in charge of the company's manufacturing system, sumed his duties the latter part of last week. He will ake his headquarters at the West Allis works of the mpany, where the general offices are located.

W. M. S. Miller, who has been in charge of the rice department of the Allis-Chalmers Company for e past six years, was recently appointed manager of e publicity department in place of C. A. Tupper, who signed to become manager of the Reliance Engineerg & Equipment Company, Milwaukee. Mr. Miller, ho has an exceptionally close acquaintance with the mpany's products, and is particularly well qualified r his present position, will combine the work of the wo departments mentioned. Prior to his connection ith the Allis-Chalmers Company he had been in the mploy of the Westinghouse Electric & Mfg. Comany at Pittsburgh, Pa.

John Pender of John Pender & Co., Brunswick, ictoria, Australia, is making a tour of the United tates, visiting rolling mills and other industries in hich he is interested. Mr. Pender's firm operates a olling mill and he contemplates purchasing additional quipment as well as a number of machine tools while this country.

At a recent meeting of the Driggs-Seabury Ordance Corporation at Sharon, Pa., St. Elmo Gross, until ecently of South Bend, Ind., was elected treasurer. . A. Harris, formerly secretary and treasurer, conmues as secretary.

Prof. John Jermain Porter, metallurgical engineer, niversity of Cincinnati, Cincinnati, Ohio, announces hat he will undertake investigations in cast iron and in fficiency of raw materials, plants and operation, parcularly in foundry and blast furnace plants.

D. B. Meacham, resident partner at Cincinnati of Rogers, Brown & Co., sails for Europe Saturday, July 6. J. K. Pollock, also a Cincinnati member of the rm, returns from Europe this week.

A. A. Fowler, resident partner in New York of Rogers, Brown & Co., returns this week from a stay f several months in Africa.

L. R. Pomeroy has been appointed chief engineer f the railroad and industrial division of J. G. White Co., Inc., with headquarters in New York City. Mr. Pomeroy has for a long time been considered an authority on railroad shop equipment, operation and construction, and is peculiarly adapted both by nature and training for his new work.

Ludwig Hammer of Aachen, Germany, is in this country making arrangements with American textile machinery manufacturers for representing their lines. His headquarters are at the Hotel Astor, New York, and he will be in this country about four weeks.

B. H. Reddy, formerly blast furnace engineer for the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., and more recently rolling mill engineer for the Morgan Engineering Company, Alliance, Ohio, is making a tour of the West, including the Pacific Coast.

William Lodge, president of the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, will sail from New York July 16. He will attend the meeting of the Mechanical Engineers and will afterward make a general tour of the Continent.

Charles F. Colbert, Jr., has succeeded T. M. Hyndman, resigned, in the sales department of the Washington Coal & Coke Company, Conestoga Building, Pittsburgh, Pa. An annoying error was made in *The Iron Age* of June 30 in printing Mr. Colbert's name as "Charles J. Colvert, Jr."

George G. McMurtry sailed for Europe Wednesday on the Mauretania.

The Morris & Bailey Steel Company's Improvements.

Contracts have been placed with the Allegheny County Light Company by the Morris & Bailey Steel Company, Pittsburgh, for electric current to illuminate the company's cold rolling mill at Wilson Station, on the Pittsburgh, Virginia & Charleston Railroad, and to operate motors with a total capacity of 460 hp. The Morris & Bailey Company is installing a new 21-in. diameter, 36-in. face, cold rolling mill to roll material 30 in. wide, and to operate this the company is installing a 350-hp. motor to be connected to the Allegheny County Light Company's lines. Steam for power has been abandoned in the operation of four old German cold rolling mills, and these will hereafter be operated by two 40-hp. and two 15-hp. motors, on current taken from the same source as noted above.

The change from steam engine drive to electric drive on the smaller mills was made to save space in the plant, increase the production and secure economy in operation. Electric motor drive for the large mill was decided upon because power purchased was demonstrated to be more economical and satisfactory in every way than either steam engine drive or motor drive from the company's own power plant.

The C. W. Hunt Company, New York, has arranged to have its coal handling, conveying and hoisting machinery business on the Pacific Coast handled by the San Francisco Bridge Company, with offices at 865 Monadnock Building, San Francisco. The company has just completed a naval coaling station in San Francisco Bay for the Government.

The United States Horse Shoe Company, Erie, Pa., has made arrangements with C. K. Turner & Son, 116 Broad street, New York, to handle its export trade in horse and mule shoes in the following countries: Asia, South and Central America, Mexico, Cuba, Philippine Islands, Porto Rico, Australia, New Zealand and Spain.

Announcement is made that the American Society for Testing Materials now has 1341 members, 61 applications having been favorably acted upon since the recent Atlantic City meeting. The gain in the past year is thus 179. A membership of 2000 is aimed at by the time of the International Congress, which will be held in the United States in 1912.

Obituary

MYRON C. WICK

Myron C. Wick, long prominent in iron and steel manufacture in the Mahoning Valley, died at Youngstown, Ohio, July 11, aged 62 years. He was for a number of years president of Cartwright, McCurdy & Co., whose Enterprise Iron Works at Youngstown was built in 1863 and added to in 1874. He became president of the Union Iron & Steel Company, formed in the early nineties, by the combination of Cartwright, McCurdy & Co. and the Youngstown Iron & Steel Company, and operating at one time five mills: the Girard, Ohio, mill, formerly owned by the Trumbull Iron Company; the Warren Rolling Mill at Warren, Ohio; the Upper Mill (Youngstown Rolling Mill Company) and Lower Mill (Cartwright, McCurdy & Co.) at Youngstown, and the Pomeroy Mill at Pomeroy, Meigs County, Ohio, operated for a time by the Pomeroy Iron & Steel Company and later acquired by Cartwright, McCurdy & Co. Mr. Wick was one of the organizers of the Ohio Steel Company in 1893 and was treasurer of that company for a time. When the Union Iron & Steel Company was acquired in 1899 by the Republic Iron & Steel Company (except as to its hoop mills, which were taken over by the American Steel Hoop Company), Mr. Wick became a director and a member of the executive committee of the consolidation, but retired from official connection with it in the following year. He had been for some years a director of the Ohio Iron & Steel Company, operating Mary furnace at Lowellville, Ohio. He was also actively interested in many other industrial enterprises, as well as financial institutions. He leaves a widow, two daughters and three sons.

EDWARD B. DOLLIVER, Worcester, Mass., treasurer of the Standard Screw Company, and manager of the Worcester Machine Screw Company, died July 6 after a brief illness, aged 61 years. He was born in Grafton, Mass. After leaving the common schools he engaged in the shoe making industry with his father, and later was in the hotel business. In 1876 he entered the employ of the Worcester Machine Screw Company, under A. W. Gifford, and served three years in the shop. In 1879 Mr. Gifford acquired full control of the business and Mr. Dolliver was placed in charge of the office, which position he held until 1900, when Mr. Gifford sold the business to the Standard Machine Screw Company. Mr. Dolliver become manager of this branch of the industry and was made a director and treasurer of the company, offices which he held until his death. He was one of the best-known men in the machine screw trade of the country. He had a large interest in the Arcade Malleable Iron Company, Worcester, and was president of the corporation. He leaves a widow and one daughter.

HENRY C. CLARK, Lee, Mass., of the firm of H. C. Clark & Son of that town, manufacturers of paper machinery, died July 3, aged 72 years. A native of Housatonic, Mass., he passed 30 years of his life in Pittsfield, during much of the time being the senior partner of the firm of Clark & Jones, manufacturers of machinery. In 1891 he went to Lee, forming a partnership with John S. Spencer, as Clark & Spencer, and upon the dissolution of the firm in 1900 H. Archer Clark was taken into the partnership. Mr. Clark leaves a widow, one son and two daughters.

EDWIN T. MARBLE, Worcester, Mass., head of the Curtis & Marble Machine Company, builder of cotton and woolen machinery, died July 3, aged 82 years. He was a native of Sutton, Mass. After completing his education at the Worcester County Manual Training School at Worcester he located in that city in 1841. Having served his apprenticeship as a machinist in the shop of Albert Curtis, he was employed as a machinist, foreman and superintendent in various local machine shops. The business of Curtis & Marble was established in 1863, with Albert Curtis as the other partner. In 1895 Mr. Marble bought Mr. Curtis' interest and the business was incorporated as the Curtis & Marble Mfg. Company. Mr. Marble was the president and treasurer, offices which he retained until his death. He held many public offices in the city and State government, and was a director of the Worcester Trust Company and a vice-president of the People Savings Bank. He leaves four sons, all of whom hold offices of responsibility in the large manufacturing plant.

W. A. STADELMAN, president and general manager of the Darley Engineering Company, New York, Chicago and Boston, died July 6 at his home at Rye, N. Y., in his 45th year. Mr. Stadelman, who was especially well known in the machinery trade, received his higher education in the University of Pennsylvania, and after taking a course in mechanical engineering there he became connected with the Sprague Motor Company, which was at that time building the first electric railroad in this country. Later Mr. Stadelman was employed with the Niles Tool Works at Hamilton, Ohio, and in 1896 he became connected with the Brown Hoisting Machinery Company, Cleveland, Ohio. He remained with that firm until 1905, when he became manager of the Eastern office of the Wellman-Seaver-Morgan Company, Cleveland. Mr. Stadelman came to be regarded as an authority on conveying equipment. A few years ago he and others organized the Darley Engineering Company, which manufactures suction and air pressure conveyors for handling and separating material. A widow and two children survive him.

I. C. NORTON, superintendent of the billet and rod mills of the Illinois Steel Company at Joliet, Ill., died in that city June 26, aged 60 years. He had suffered from an intestinal trouble, for which an operation had been performed. He was born at Lockport, near Joliet, in 1850, and received his education there and in Chicago. In 1878 he entered the service of the Joliet mills of the Illinois Steel Company as a timekeeper and advanced steadily. He was active in the public life of the community and was an exemplary citizen.

JACOB WERTHEIMER, St. Louis, died July 7, aged 70 years. He was a native of Hesse-Darmstadt, Germany, and came to America at the age of 21, settling in New York City. He subsequently removed to St. Louis and engaged in the iron business, from which he retired several years ago.

Concerning the recently published statement that balata belting (made of gutta percha, balata rubber and specially woven duck) is about to be manufactured in the United States for the first time, the Boston Belting Company, Boston, Mass., says that it is at present the only domestic manufacturer of this product; that three other interests are preparing to manufacture it in this country, one having already erected a plant, while two others have completed plans for building.

The National Railways of Mexico has placed an order with the American Car & Foundry Company for 2500 cars, to include 1600 box cars, 500 gondola cars, 100 tank cars, 150 flat cars and 150 stock cars. The Baltimore & Ohio Railroad has also been active in placing car orders, as previously mentioned, and has also purchased 50 locomotives of the Mikado type and 30 Mallets. The locomotive orders went to the Baldwin Locomotive Works.

The Warwick Iron & Steel Company, Pottstown, Pa., contemplates blowing in its No. 1 blast furnace, which has for some months been undergoing repairs, about June 20. This action will, it is said, be necessary owing to increased sales of pig iron recently made. The stack will be operated on foundry iron.

The International Congress of Mining, Metallurgy and Applied Geology

Important Papers at Duesseldorf on Recent Practice in Iron and Steel and Related Industries

BY CHARLES KIRCHHOFF.

DUESSELDORF, GERMANY, June 24, 1910.—In a previous letter were given some general facts concerning the preparations for the fifth "International Congress for Mining, Metallurgy, Applied Mechanics and Practical Geology"; also something about Duesseldorf and the great building of the German Steel Syndicate. Preliminary to the congress a gathering was held on Sunday evening in the Zoological Garden, brilliantly illuminated for the occasion. A large military band played while the members were grouped around tables on the piazza of the restaurant, in the open air, enjoying German hospitality.

FIRST SESSION

The meetings began on Monday morning at the Municipal Music Hall, a city building in which frequent concerts are held indoors or in the adjoining garden, according to the season. There are two large halls and a series of smaller ones, which furnished ample accommodations for the functions held. The proceedings opened with an address of welcome by President Kleine, who alluded to the history of the movement. Started originally at the suggestion of the Société de l'Industrie Minérale of St. Etienne in France at the time of the Paris Exhibition of 1878, on a very modest scale, there were larger gatherings in connection with the expositions in Paris in 1889 and in 1900. The meeting at Liége in Belgium followed in 1905, again on the occasion of an exhibition; so that it is for the first time in the history of the movement that Duesseldorf has ventured the invitation without the inducement of an international show. During the course of the congress it developed that the Iron and Steel Institute has put forward the claims of Great Britain and has issued a call to London for 1915.

After Dr. Schaltenbrand, the general manager of the German Steel Syndicate, had translated the speech into both French and English, the Prussian Minister of Commerce, Sydow, welcomed the congress in behalf of the German Chancellor and in the name of the Prussian Government, being followed again by Dr. Schaltenbrand as interpreter. At the motion of Louis Dejardin, Director General of Mining of Belgium, seconded by C. Kirchhoff and T. Martin, British Inspector of Mines, it was decided by acclamation to place the conduct of the congress in the hands of the preliminary organization which had worked out the details of the meeting. The formal proceedings were thus disposed of very promptly, and the congress settled down at once to the huge amount of business before it, in the reading of papers and their discussion.

A Remarkable Array of Papers

The congress was divided into five sections, which held their meetings simultaneously, so that each kept within manageable proportions. These were Mining, Practical Metallurgy, Theoretical Metallurgy, Applied Mechanics and Applied Geology. Not less than 120 papers were ready for presentation, to be dealt with in four sessions. Your correspondent naturally selected the section of Practical Metallurgy as the one most likely to interest the readers of *The Iron Age*. So far as he was able to ascertain, there was little more of animated discussion in the other sections than in that of Practical Metallurgy, so that a report could be little more than an enumeration of the papers presented. Let it be stated that these were throughout exceedingly high in character, the majority of them being by German authors. It seems probable that in many cases the subjects were assigned by the management to well-known experts, whose object it was to present the progress in each particular field in the Fatherland and submit the latest results. Taking it altogether, they constitute a brilliant summary of the latest achievements and trend of thought; and it may be added there is throughout not the trace of an effort to utilize the opportunity to push commercially any particular apparatus or process.

The first paper presented was on

"The Development of Coke Plants Due to Improvements in Type of Oven"

BY PROFESSOR HERBST, AACHEN.

The author limits his review to the consideration of the mechanical arrangements of the coke ovens proper, and leaves out the question of recovery of by-products. The newest development in the construction of ovens lies almost exclusively in an improvement in the horizontal oven with vertical heating flues. The following firms have contributed to this:

1. C. Otto & Co., Dahlhausen (Ruhr), who have developed both their ordinary oven with gas outflow and their regenerative type, both underfired.

2. H. Koppers, Essen (Ruhr), whose furnace has inclined chambers and who have introduced a new type of regenerative furnace, this being designed both for air and gas regeneration; in the present case, as in that of ovens with inclined chambers generally, the oven yields lighting gas, and owing to the outflow of all available gases leads to the necessity of heating with producer gas a regeneration of which is desirable, large quantities of gas being dealt with; further data on this oven are given in a separate chapter dealing with the production of lighting, heating and power gases in coke oven plants.

3. The firm of Franz Brunck, Dortmund, which has maintained its recuperative furnace with double wall heating conduits, but has increased the flame and modified the system of recuperation.

4. F. J. Collin, Dortmund, has a regenerative oven, in which a heating through of the walls as regularly as possible is aimed at, regardless of a regular reversing of the draught, the oven being heated alternately top and bottom, instead of alternately right and left.

5. The Rheinische Chamotte und Dinas-Werke, Cologne, has introduced a regenerative coke oven in which irregular heating due to reversing is also prevented to the greatest possible extent, this being arrived at by a suitable device for delivering air and fresh gas, and for connecting the heating walls with the heating and cooling supplies.

6. Salau & Birkholz, Essen, have a particular type of oven, on the Kros design, the feature of which is that reversing does not take place in the heating flues, its action being limited to the space beneath the oven.

7. E. Coppée, Brussels, builds a regenerative oven in which the bottom flues in the oven chambers are alternately connected with the regenerators situated underneath the oven, in such a way that in one heating period the ovens having even numbers, and in the following those having uneven numbers are connected alternately to the fresh delivery of air and to heating supply.

Recent improvements apply mainly to the development of the regenerative oven. This has increased in importance owing to development in the use of coke oven gas engines and especially to the recent application of coke oven gas for lighting, heating and power purposes in towns. The improvements in question deal with a greater regularity in the heating, with the attainment of the largest possible in vol-

ume of gas by a careful utilization of the calorific value of heating gases and with a reduction in the coking period.

GAS FROM COKE OVENS.

A separate chapter deals with the coke oven gas supply for cities. This met with success in North America, thanks to the energetic action taken in this respect by F. Schniewind as early as in the nineties. In Europe resistance had at first to be overcome on the part of gas engineers. Now, however, the supply of this gas to cities is getting into full swing. Koppers, among the above mentioned firms, has met with special success in this problem by building and working special coke ovens. The Rheinische Chamotte und Dinas-Werke is also dealing with the problem. The Stettiner Chamottefabriken has built, among other ovens, those for the Munich Gas Works.

Since the working of coke ovens, owing to the large quantities of coal dealt with and gasified, and also to the comparative cheapness of the process, is less dependent upon the richness in gas of the coke, the quality of the gas produced is less rich both at the beginning and toward the end of the process. Generally, therefore, the gas obtained during the favorable period is supplied as rich gas, the poor gas being utilized for heating the ovens. In large batteries of coke ovens, a natural equalization of the gases may take place and the whole of the gas produced may be supplied to outside customers, in which case the ovens must be heated by separate producers.

The ovens having inclined coal chambers are referred to in the first place as having met the case and having been found suitable for town gas supply; they are now, however, being superseded in many large installations by horizontal ovens. Examples of the former, built by Koppers and by the Stettiner Chamotte-Fabriken, are given, together with particulars upon the horizontal ovens for gas production.

OPERATING THE OVENS.

Under this head, the charging apparatus is first referred to, and various examples are given for the rapid charging on the top by trucks in the direction of the width of the oven and through several openings. In regard to charging from the side by means of pushers, after previous stamping of the coal into an iron mold, various designs are referred to, among others, those of Méguin & Co., Dillingen (Saar), who have specially dealt with the development in the coal stamping process, being led thereto by the character of the coal mined in their district. The arrangement of the leveling and charging devices and of those for supplying them with coal is clearly shown. Attention is called to a series of precautions to be taken with regard to objectionable gases developed during the charging of the oven; the matter has already been dealt with in detail in the technical press, and is briefly alluded to under Koppers, Collin and other firms.

Activity has also been displayed in regard to the mechanical leveling of the coal inside the coke oven, this having been developed by a large number of engineering firms, among which may be mentioned the Bochumer Eisenhütte, Bochum; Hartung, Kuhn & Co., Duesseldorf; Gewerkschaft Schalker Eisenhütte, Gelsenkirchen-Schalke; the Sächsische Machinenfabrik vorm. Rich. Hartmann, Chemnitz; H. Koppers; Méguin & Co.; Baroper Maschinenbaugesellschaft; Maschinenbauanstalt Altenessen; and Franz Brunck. Three types of machines are resorted to, the leveling being effected either by rack gear, by chain or rope transmission, or by crank with an oscillating lever.

In the matter of coke pushers, no special novelty requires mentioning. Care has been taken to build these machines on powerful and safe working as possible.

Manufacturers have also given their attention to the designing of the oven doors. The supply of gas to towns has made it incumbent upon the producers to provide tighter doors than is possible by the usual coating of loam. Types of doors are referred to which render the loam coating unnecessary. The "tight doors" may be mentioned at this point. These facilitate a better heating of the top of the cake of coke. They press against inclined packing surfaces provided on the oven. New protective devices provided for preventing the burning of the doors are alluded to. For leveling, a number of small openings are available. The more recent chain lifting and other devices for working the doors are briefly described.

Special features now surround the quenching of the coke with the object of both saving labor and securing very rapid quenching so as to prevent the coke from absorbing too great a proportion of water. Portable quenching apparatus is mentioned. Attempts to turn to account the waste heat in the quenching process have hitherto not given practical results.

Mechanical conveying devices for loading are being used to an increasing extent, especially in countries where manual labor is high. Band conveyors are specially used, partly also for serving the coke-breaking and screening plant. Several examples are given. The conveyors are charged from an inclined plane suitably arranged. Bucket conveyors and grabs for loading the coke are also noticed.

Another important phase of the same subject was dealt with in the paper by Prof. O. Rau of Aix-le-Chapelle on

Progress in the Recovery of By-Products in Coke Making

The statistics of the world, although defective, indicate the rapid development. They are best expressed in the returns of the output of sulphate of ammonia, which rose from 484,000 tons in all countries in 1900 to 952,000 tons in 1909. To this Great Britain contributed 348,000 tons, Germany 323,000 tons, the United States 90,000 tons, France 54,000 tons and the other countries 137,000 tons. In Great Britain the quantity was made up of 171,000 tons from gas works, 75,000 tons from coke oven plants, 19,000 tons from blast furnaces, 26,000 tons from producers and 57,000 tons from shale works. In Germany, on the other hand, gas works contributed only 40,000 tons, coke plants 278,000 tons, and sugar refineries 5000 tons. Professor Rau's paper is an exhaustive summary of the literature of the subject, dealing with the investigations made concerning the gasification of coal, its influence upon the output of tar, the considerations affecting the coking quality of coal, the chemistry of nitrogen, the separation of the by-products, the direct sulphate process and other methods and the utilization of the tar, benzole, ammonia, gas and other by-products.

G. Francke, professor at the School of Mines at Berlin, reported on the

Present Position of Iron Ore Briquetting and Agglomerating in Germany

The author reports that there are now in Germany nine plants briquetting daily about 2200 tons of ore, fluedust, blue billy, &c., and one iron and manganese ore agglomerating plant with a daily product of 130 tons. Of the whole the quantity of fluedust handled amounts to about 510,000 tons, or about one-third of the quantity produced at German blast furnaces. This, however, will be materially increased since there are five or six fluedust briquetting plants in course of construction or approaching completion. At the present time fluedust is being worked on a commercial scale by the chloride of magnesium process of Dr. Schumacher at the Dortmund Union, Dudelingen and Haspe works by the lime process of the Maschinenbau A. G. Tigler of Duisburg-Meiderich, at the Deutscher Kaiser works, the pitch process of Dr. Trainer also at Deutscher Kaiser and the process of the Scoria Gesellschaft of Dortmund at the Krupp works at Rheinhausen. New plants are being built at Rombach, Schalke, Hoesch, Gutehoffnungshuette and Rheinische Stahlwerke, which are adopting either the chloride of magnesium process, the Tigler lime process or the Ronay hydraulic pressure method, controlled by the Allgemeine Briquettierungs-Gesellschaft of Berlin.

The chloride of magnesium process calls for only low cost of plant, 50,000 to 60,000 marks for a capacity of 60 tons in 10 hours, low wages, power and material. At Dudelingen the addition of ½ per cent. of chloride of magnesium in the form of 1½ per cent. of a 33 per cent. solution suffices. The cost of briquetting the fluedust, inclusive of interest and sinking fund, is 1.60 marks per ton of briquettes, while at the Dortmund Union the cost is 1.70 marks on account of somewhat larger requirements of chloride of calcium.

The lime process calls for the addition of 6 to 8 per cent. of slaked lime ground with 1 per cent. of blast furnace slag. The briquetting pressure is 200 to 400 atmospheres, which yields fair briquettes, but the cost is high. The pitch process has produced good briquettes, but the cost of the pitch is high, 40 marks per ton, and the pressure required, 600 atmospheres, is also high.

No data relative to the Scoria process used at Krupp's could be obtained.

The Ronay high pressure process is being introduced at several places. No binder is required, but the pressure ranges between 900 and several thousand atmospheres.

The iron ore briquetting plants produce about 150,000 tons annually. They include the plant of the Ilsede Huette near Peine, Hanover, where clayey brown iron ore and calcareous concentrates are briquetted by a special process with roll cinder, basic Bessemer slag, purple ore, &c., mixed hot. At the Georgsmarienhuette at Osmabrueck, the lime process is used for purple ore and fluedust. The Schumacher process is also employed at the Koenigshuette in Upper Silesia either for purple ore alone or mixed with heavy fluedust and Gellivara magnetic concentrates.

At the Friedenshuette in Upper Silesia the Ronay process is in use on a mixture of purple ore and either converter or fluedust or 3 per cent. of slaked lime.

The Ilsede plant has the reputation of working most cheaply, at a shade under 1 mark. The results at the furnaces show that the use of briquettes increases the output considerably, decreases the consumption of coke very materially, and lowers the output of fluedust. Similar experiences have been made at Koenigshuette and at Georgsmarienhuette.

The sintering process has been in use at only one point in Germany, at the Giessener Braunsteinwerke at Giessen. The cylinders were built by Fellner & Ziegler of Frankfurt a M-Bockenheim and yielded a product suitable for shipping to distant points at a satisfactory cost.

BRIQUETTING BORINGS AND TURNINGS.

Professor Francke at the end of his paper alludes to the briquetting of wrought iron, cast iron and steel turnings and borings by the Ronay process, by progressive hydraulic pressure ranging from 1200 to 2000 atmospheres and upward. Working results have shown that briquettes made of turnings show a loss of only 4 to a maximum of 10 per cent. in melting and yield much better castings, particularly as to density, toughness and strength, so that they make it possible to dispense with the usual additions of expensive special grades of pig iron. Different plants are operating under this method very satisfactorily, among them the Saechsische Metallbrikettwerke at Chemnitz, A. Borsig of Berlin-Tegel and Berliner Eisenbrikettwerke. Further central briquetting plants for turnings are being built for Gebr. Sulzer of Winterthur, for the Imperial Navy Yard at Kiel and at Vienna, Buda Pesth and Leeds.

DISCUSSION.

In the discussion a rather vigorous protest was entered by Dr. Weiskopf of Hanover, a member of the commission appointed by the German Society of Iron Masters to look into briquetting, against some of the low costs given in the paper. He stated that the investigations of the committee had gone far enough to justify the statement that 3 marks per ton was as low as had yet been attained in briquetting anywhere in Germany.

Prof. Henry Louis of Newcastle-on-Tyne referred to the very great development in England, the United States and Sweden of the nodulizing process, which apparently was not appreciated in Germany. He noted the considerable reduction in the consumption of fuel in the blast furnace and instanced a case in Sweden of a blast furnace whose consumption of charcoal when using nodulized Swedish magnetites had declined to 850 kg., as compared with 1200 kg. required when untreated ore was charged.

Dr. Blasberg of Dahlhausen followed with a paper on

The Change in the Composition of Firebrick

The paper deals with the changes which occur in the composition of firebrick, the analyses being given in some cases; the changes observed are those due to heat, slags, &c. Special attention has been given, in the researches carried out, to the working of coke ovens and the manufacture of open hearth steel. In the case of the behavior of bricks in coke ovens, the action of common salt which happens to be in solution in the water used for washing the coal comes specially into play. Attention is also called to the damage which may also be caused by the deposit of solid coal particles in the joints of the brick. In the case of open hearth furnaces, the destruction of the silica bricks, of which the roof of the furnace is built, is reviewed, the action both of basic oxides and of deposits of carbon being considered.

A very interesting, fully illustrated paper was that of Curt Grosse of Metz on

The Present State of Cleaning Blast Furnace Gases in Germany

In the German customs union there are produced at the present time, corresponding to an annual production of 13,600,000 tons of pig iron, about 7,650,000 c. m. of waste blast furnace gases per hour reduced to a temperature of zero C and a pressure of 760 mm. At present 4,840,000 c. m. of this quantity are cleaned. This sum also includes the plants in construction. As a rule the gas first passes dust catchers and is then thoroughly refrigerated and washed several times. The large dust catchers have a capacity of about 0.8 to 1.5 per cent. of the gas quantity to be cleaned per hour. The ratio of the diameter to the hight of the dust catchers varies between 1:2 and 1:3 according to the ore worked. The rising and falling pipes of 2 to 3 m. diameter and to 25 m. hight which are still in use have not the effect ascribed to them. Large dust catchers are much better. The coolers are mostly constructed as fixed apparatus, as they need a large space when intense cooling is required. (Capacity about 0.6 to 1 per cent. of the quantity of gas to be cooled per hour.) The cooling must be done thoroughly in order to condense the steam contained in the gases as completely as possible, because in this way the useful calorific power as well as the pyrometric effect is considerably increased.

In coolers of right dimensions the temperature of the gases can be decreased down to 3 or 5 degrees C over the entrance temperature of the cooling water. At the same time 30 to 60 per cent. of the dust are extracted. Mechanical rough and fine cleaning of the blast furnace gases are done by different systems. The author refers to the principal systems—the Zschocke, Theisen, Bian and Schwarz—and treats their effect, requirements of power, water, &c., by showing drawings of whole plants and details.

Of new constructions (being at the beginning of their development) are mentioned those of Hartmann and Bayer working after the desintegrator system and the Flössel system. Both give good results.

In order to decrease the costs for service and installation it is recommended that the large establishments do the cleaning in a centralized cleaning plant, as in this way the great fluctuations of the single furnaces compensate each other, the plants being easily managed, with complete and cheap reserve apparatus. The conditions required to-day of a good cleaning plant for blast furnace gases are:

1. The cooling of the gases must be done as thoroughly as possible in order to extract the steam as completely as possible;
2. The gases for heating purposes may only contain 0.1 to 0.5 grammes of dust per cubic meter, whereas for gas engines are admissible only 0.01 to 0.03 grammes at a temperature of about 25 degrees C.
3. All apparatus must be as simple and safe as possible.
4. The plant must allow good inspection and easy regulation within wide limits.

RESULTS AT VARIOUS BLAST FURNACE PLANTS.

Data collected by the author from different blast furnace plants show that the reduction in the consumption of coke brought about by the installation of gas cleaning fluctuators is between 20 and 55 kg. per ton of iron. One furnace company, however, does not record any lowering in coke consumption. After the introduction of gas cleaning plants the increase in the temperature of the blast amounted to 60 to 100 degrees Celsius at the different works. The time during which the hot blast stoves were on gas was lessened from 8 to 5 hours and from 6 to 3 hours, being therefore nearly cut in two. The time during which the stoves could be kept in blast rose from 1 hour to 1½ hours and from 1½ to 2 hours, or an average of ½ hour. Two plants, it is true, report that after introducing gas cleaning they could neither keep the stoves longer on blast, nor shorter on gas. The stoves when burning cleaned gas require about 42 to 44 per cent. of the entire output of gas. Adding 16 to 18 per cent. for the requirements of the furnaces themselves, there remained available from 37 to 42 per cent. of the entire gas produced for the steel works and rolling mills or for other purposes, while formerly, with uncleaned gas, nearly all of it was consumed for their own hot blast stoves and boilers. The introduction of gas cleaning, therefore, leads to a very considerable saving of money. Figures up to 40 per cent. have been given to the author. Two plants do not record any saving of money. The production of steam showed an average increase after the introduction of cleaned gas of 10 per cent. or 2 to 22 kg. per square meter of heating surface per hour.

The life of the hot blast stoves increased on an average from two to three months to 12 to 14 months and that of the boiler flues from one to three to four months. The returns and opinions as to the life of the hot blast stove brick when heated with cleaned gas vary a good deal. One manager reports that the stove brick would wear more rapidly than with uncleaned gas, but the other works state that the life of the brick is longer. It seems to depend upon whether the brick, at the time of the introduction of gas cleaning, had been working for a considerable time with uncleaned gas. In that case there were probably accretions of slag which were melted by the higher temperature due to heating with cleaned gas, thus destroying the brick more rapidly. With fresh brick at the introduction of cleaned gas, accretions of slag are avoided at the outstart and the life of the brick is longer. At some of the works the temperature of the escaping gases in the flue is still very high (up to 500 degrees Celsius). This proves that the heating has not been properly installed. Under normal conditions the temperature should not go above 300 degrees Celsius, but then the design of the hot blast stove should be adapted to the use of cleaned gas. The cooled and cleaned gas has a materially higher calorific value and demands a longer path in the stove in order to surrender its heat fully. Recently, therefore, the stoves have been built to a hight of 40 m. The consumption of gas for heating becomes very advantageous since the diameter is reduced. Probably a diameter of 6 to 7 m. would be the most effective for such stoves and would yield the maximum efficiency.

This shows clearly the great advantage secured by gas cleaning plants. They make it possible to utilize waste furnace gas effectively. Realizing this, various works have developed their cleaning plant very well and have even provided for reserve producer plant in order to be supplied with gas, in case of stoppages, so that the cheaply operated gas engines may be always kept running full. These producers

are, of course, so arranged that their gas first passes through the cleaning plant before going to the gas engines. The blast furnaces possess the source of great earning capacity in their waste gases, provided they are cleaned. The excess of gas is so large that blast furnaces are able to supply electric current to neighboring factories at a low price. They may heat the drying ovens of large foundries and it is probable that in the near future other methods of utilizing the furnace gases may be found.

Dr. H. Passow of Blankensee, who is one of the greatest cement experts of Germany, submitted a paper on

The Value of Microscopical Research for the Grading of Blast Furnace Slags

The value of the microscope for judging the hydraulic value of basic blast furnace slags was recognized for the first time about 10 years ago, when even a limited enlargement showed that by granulation and crushing there were produced both vitreous and nonvitreous slag particles. These two forms cannot be differentiated one from the other by analysis. In the manufacture of slag Portland cement, therefore, as in that of the other kinds of cement using basic blast furnace slags—which have no relationship with puzzolana cement, but are equal in value to Portland cement—the microscope must constantly be resorted to, since it shows very rapidly whether granulation or crushing has yielded vitreous or nonvitreous slag particles.

It is only the vitreous slags which have a market value for the manufacture of slag Portland cement and other slag cements. When the microscope reveals that granulation or crushing has yielded too large a proportion of nonvitreous particles, or that the subsequent drying has had for effect to largely increase the latter, then suitable means must be taken to prevent the detrimental action. The author states instances and gives a large number of data and micrographs to illustrate the subject.

The microscope plays an equally important part in the case of a new plant. Every blast furnace yields a slag which is either subject to reaction or is not, and also a slag having properties between the two. The slags which are subject to reaction give the best cements, but it is more difficult to convert them into vitreous form than those in which reaction is slow. The grades that are between the two extremes are the most suitable for cement manufacture. The microscope settles these and all similar points; it cannot be dispensed with and it should find a place in all works' laboratories and experimental stations.

SECOND SESSION

The Monday afternoon session was opened by W. Esser of Differdingen, Luxemburg, on

The Present Status of the Basic Bessemer Process in Germany

The author reviews the enormous development of the industry, the output rising from 328,909 tons in 1883 to 7,668,599 tons in 1909. He showed the progressive change in the layout of the plants from the early two converters grouped about a circular pit, followed by a group of three vessels supplied by a mixer, a similar group of three served by a straight pit, a set of four 25-ton converters in line, with two 500-ton mixers and a straight casting pit, as at the Rheinhausen works of Krupp and other modern works. A review was given in detail of the steps taken to increase capacity, lengthen the life of plant, reduce waste and lower labor cost, together with some interesting figures showing the mass of materials which must be handled by a modern German basic Bessemer plant. The maximum output yet attained has been 560,000 tons in one plant in one year. This calls, per day of 24 hours, for the supply of 2100 tons of pig iron, to be transported from the blast furnaces to the mixers in 110 ladle changes. This quantity is blown in 129 heats, which require 260 tons of burnt lime and call for about 23 tons of sintered dolomite and tar. The slag produced foots up to about 400 tons and the steel scrap amounts to 50 tons. The blowing engines must handle 950,000 c. m. of blast and deliver at a pressure of 2 atmospheres. The three casting ladle cars must each carry 633 tons of molten steel in 43 trips from the converters to the cast house, and with 3-ton ingots there are cast 645 ingots, which must be transported from the cast house to the soaking pits. If this work is done by two electric cranes, each crane must make 322 trips in 24 hours. Such an output has been possible only by improving the lining until a well-handle steel plant makes an average of 280 blows without repairs. The normal life of needle bottoms is 60 to 65 blows, while it may be put at 95 blows for tuyere bottoms.

Esser's review of the conditions underlying and affecting the future of the basic Bessemer process is so complete and so clearly put from both the technical and commercial point of view that it deserves practically full reproduction. It shows the strength and the weakness of different districts, and throws light upon the struggle which is now being waged among those who are after all the most formidable competitors of our own makers. The basic Bessemer is the backbone of the German competition, in Germany and in the world's markets. The works outside of the Minette district are looking for relief to the open hearth pig and ore process, in which is involved the question of quality of the basic Bessemer product. With the steady advance in the requirements for rail quality the basic Bessemer companies are getting uneasy, and, in fact, are having more and more trouble with the state railroads, and, of course, are seriously open to attack in the international markets.

A very full synopsis of this important paper—important both technically and commercially—is given in a separate article.

R. Genziner, manager of the Julienhuette, in Upper Silesia, read a paper on

The Ore Processes in Germany

The Siemens-Martin process, in the first years of its application, mainly served to melt the scrap obtained in the works in which it was used, or scrap purchased from outside, together with the smallest possible amount of pig iron. The open hearth process, on the other hand, brought about a great change in the last years, when the use of pig iron in its molten state was introduced. The Austrian Donawitz works commenced with this process on a large scale in 1893. At the present time a large number of German plants work with molten pig iron, and it may be considered certain that the ore-process will shortly lead to a further great development. The following processes are in use at the present time in Germany:

1. Ore-process with a molten charge of pig iron having a low or an average percentage of phosphorus, and taken
   (a) Direct from the blast-furnace, or
   (b) After passing through the usual type of heated mixer, or again
   (c) Using a mixer for partly refining.
2. The Bertrand-Thiel process or Hoesch process, using a molten pig iron charge having a high percentage of phosphorus (basic iron).

The author, as a typical instance, gives under 1a, a description of the process followed at the Hubertushuette, where the open hearth furnaces are almost exclusively worked with coke oven gas. Analyses and combustion curves are added, together with data on the technical efficiency of the furnace, its output and consumption.

Under 1b, he gives details on the working with a heated mixer at Julienhuette. The great advantage resulting from the use of such a mixer in the open hearth process is shown by the analyses of blast furnace pig iron and of the iron from the mixer. A description of the installation at the same steel works follows, together with one illustrating the metallurgical transformations of typical charges, and analyses of slag taken both during the process and on completion of same. Data are added concerning the arrangement of the Niederrheinische Huette, Hochfeld, in which the working up of molten pig iron charges is shortly to be adopted.

The author further describes under 1c the ore-process using a mixer in which refining begins to take place and he instances the Georgsmarienhuette, the Huestener and the Bethlen-Falva works, special attention being called to the interesting conditions ruling in the first of these three establishments, in which the mixer is operated with cleaned blast furnace gas.

In chapter 2 is given the exact description of the Hoesch process, complete data being added on the metallurgical progress of the method, which is gradually gaining more and more importance. The method followed at the Phoenix Steel Works, Hoerde, is also described. In this, cold basic iron is occasionally used on a method similar to that followed at Hoesch. The author adds a few data showing the manner in which many steel works have advantageously developed the scrap process. He concludes with statistics giving an idea of the extent to which the

open hearth furnace is gradually superseding the converter in Germany and in other countries in regard to the quantity of output.

H. Terpitz of the Hubertushuette dealt with

The Use of Different Gases for Operating Open Hearth Furnaces and Their Influence on the Quality of the Products

Special interest attaches at the present time to the utilization for operating open hearth furnaces of the waste gases from coke ovens and of the surplus gases from blast furnaces, larger quantities of which become available as the result of the development of gas engines. For instance 7 to 8 c. m. of furnace gas is required per horsepower hour for a steam engine, as compared with 3 to 3½ c. m. of furnace gas for a gas engine. At some works, as the Hoerde, furnace gas has been conducted in a 3 km. pipe line to a distant rolling mill for firing boilers, but other works have no such outlet and must use considerable quantities of gas. At a number of places the effort has been made to take the waste blast furnace gas to open hearth furnaces, but the results have been disappointing on account of the low calorific value as compared with good producer gas. The most extensive experiments of the character have been carried out at the new steel works of the Georgs-Marienhuette at Osnabrueck, where furnace gas alone is used for the tilting primary open hearth furnaces. Terpitz gives it as his personal opinion that in a few years open hearth furnaces will be operated successfully, using blast furnace gas wholly or partly. He supports the proposals of Jos. von Ehrenwerth and Schmidhammer to regenerate blast furnace gas by passing it through coke breeze or fine coal heated with oxygen manufactured by the Linde process.

As for the utilization of waste coke oven gas for working open hearth furnaces, the Hubertushuette started to do this in May, 1907. During the first calendar year the normal coal consumption was brought down by only 2.13 per cent. In 1908, however, 41.19 per cent. and in 1909 43 per cent. of the total coal consumption was supplanted by coke oven gas. The best results were attained in September, 1909, in which, on a production of 6200 tons of ingots, the coal consumption amounted to only 14.9 per cent., so that 53.15 per cent. of the total requirements of coal were supplanted by coke gas. In these comparisons the basis was the average annual coal consumption of 1906, when it amounted to 318 kg. per ton of ingots.

The new coke plant consists of two groups of 45 Otto-Hoffmann ovens each, in which 320 tons are put through in 24 hours. The excess of gas per day is 60,000 to 70,000 c. m., which is not alone used for the open hearth furnaces but also for heating the drying ovens of the foundry and for other purposes. It carries 6.5 per cent. carbonic acid, 2 per cent. of heavy hydrocarbons, 1 per cent. of oxygen, 16.4 per cent. of methane, 38.7 per cent. of hydrogen, 24.8 per cent. of nitrogen and 10.6 per cent. of carbonic oxide. The lower calorific value is about 3300 heat units without elimination of benzole.

Terpitz ascribes the adverse effect upon the quality of the steel, which is usually attributed to the presence of hydrogen in the heating gases, entirely to mistakes in the temperature of the open hearth heats, which may easily be made worse by mistakes in casting. He takes similar ground as to nitrogen. As for sulphur in the heating gas, he cites some experiences and urges that the prejudices against the effect of heating gases upon the metal in the basic open hearth process be dropped, and that attention be directed wholly to the gases which are generated in the bath itself in the oxidizing and reducing reactions. He admits a lowering in the life of furnace ports and roofs by 8 to 10 per cent., which he attributes to the increased difficulties which the employment of a higher grade gas involves.

Since it has been shown that open hearth furnaces may be operated with full success with waste coke oven gas, a wide range is opened for the by products of coke oven plants. Since it is easier to utilize low grade dust coal under boilers than in the producers of open hearth furnaces, it may prove expedient in some localities to deliver the coke oven gases rather to the open hearth furnaces than to the boilers, and the question may arise, where gas engines are in use, whether the excess of waste coke oven gas be more effectively used for generating power or for heating open hearth furnaces. If there be an excess of both waste blast furnace gas and of coke oven gas, it will be best to utilize the coke gas for the open hearth furnaces and the blast furnace gas for the engines, because the higher calorific value of the furnace is useful for the working of the furnaces but is rather disadvantageous for driving gas engines because of the greater strains put upon the working cylinders and valve heads of the gas engines as the result of the higher temperatures. An intimate and regular mixture of gas and air is more easily attained in using blast furnace gas for the engines, because the volumes are more nearly alike than they are with coke oven gas with its three and one-half times higher calorific value.

The paper of O. Friedrich of Julienhuette, Upper Silesia, on "Recent Improvements in the Construction of Open Hearth Furnaces" contains a number of drawings of the latest designs tested in Germany, and the text cannot well be understood without the illustrations.

Dr. B. Neumann of Darmstadt reported on

The Present Status of the Electro Steel Processes

He goes over the well trodden ground of describing the Heroult, Stassano, Girod, Keller, Kjellin and Roechling-Rodenhauser furnaces, without adding much that is new. He submits interesting data, however, on the Nathusius furnace, which possesses some apparently valuable features, and which has been in operation for a year at the Friedenshuette, Upper Silesia, apparently refining liquid basic Bessemer metal. Dr. Neumann appears to have succeeded in at last eliciting some information from Krupp on the Frick furnace and its operations, concerning which so little has reached the public so far. He furnishes some data, too, with regard to the Hiorth induction furnace, which is in operation at Helleven, on the Jossingfjord, and to the operations of the plant of Le Gallais Metz & Cie at Dommeldingen, who have been endeavoring to convert Luxemburg pig with 0.6 silicon, 1.2 manganese, 0.12 sulphur and 1.8 phosphorus into steel castings.

A second paper on electro steel was that of G. Arnon of Paris, which dealt almost entirely with tests of steel made at the Forges d'Allevard in the Chaplet furnace and at the P. Girod steel works at Ugine. They simply confirm the mass of evidence already available as to the very high quality of the metal made in the electric furnace. The discussion brought out by these two papers was not as animated as expected, and elicited little of interest, the lateness of the hour possibly being responsible for this.

THIRD SESSION

Tuesday morning was given over to work, all the sections holding very well attended sessions. That of Practical Metallurgy was opened with a paper, transferred from the previous day, by P. Breuil of Conillett, Belgium, on "Rail Steel." It is a very conscientious summary of the mass of data collected in Europe and America on the relations between the chemical composition and the wearing qualities of rails, which is now beginning to agitate somewhat seriously the rail industry of the continent and particularly of Germany.

C. Irresberger of Muelheim a. d. Ruhr presented an illustrated paper on

The Present Status of the Foundry Industry in Germany

Neglected until very recent years, this industry has built a number of broadly planned foundries for machine castings, jobbing and for special work which are worthy of comparison, technically, with the finest plants in other branches of the iron industry. They command an excellent staff of foundry engineers, educated at technical universities, and of foremen who have added to their training at trade schools long experience in foundry practice and particularly in molding. Much has been done for the workmen; the foundries are heated and well ventilated, and are provided with spacious well kept refreshment rooms and bathrooms. Formerly the main feature of a foundry was the skill of the molders; now it lies chiefly in varied costly mechanical equipment. Everywhere molding machines have been introduced; handling is done mechanically, and even the cupolas are in many cases supplied with charging apparatus. Great care is given to the analysis of raw materials, and to-day there are very few foundries which do not steadily or temporarily utilize the aid of a laboratory. Sand dressing machinery and appliances for the cleaning of castings are highly developed. The former are frequently entirely automatic, costing as much as did decades ago an entire foundry of fair capacity. The art of cleaning castings has attained its climax with the cleaning plants in which the workman does the cleaning with a sand blast while protected by an air veil.

In the development of the foundry trade two tendencies are apparent. The blast furnaces endeavor to capture one special branch after the other, in order to reduce administration and other general costs, while the foundries proper

try to devote their entire energies to few castings in order to simplify plant and reach maximum capacity. The furnace foundries possess an advantage over the remelting foundries since they get their iron without cost of handling and marketing, and they will gain further since the introduction of iron mixers, which render remelting in the cupola unnecessary even for more delicate castings. At the present time there are employed in Germany 120,000 men in 1560 foundries, which annually produce 2,750,000 tons of castings, valued at almost $125,000,000.

A splendid review is that of H. Ortmann of Voelklingen on the

Improvements Made During the Last Ten Years in Rolling Mill Construction

The author deals with the subject under four headings, as follows:

1. The rolling mill proper—*i. e.*, the housing, its fittings and the rolls.

2. The gearing—*i. e.*, the mechanical parts which transfer the motion and power from the engine to the rolls, and are located between the latter and the engine; wobbler shafts, couplings and cogwheels.

3. The engine—steam engine, gas engine or electric motor.

4. All devices used for feeding the rolls and carrying the material in course of rolling until the material is rolled complete; sets of rollers, conveyors, traversing heads, bloom and other shears, straightening machines, &c.

Not many new features are pointed out in part 1. Attention is called, however, to the fact that by reason of a better design for the base of the housing frames and the use of an improved cross connection at the top part of the housing standards the frame is now more rigidly built. This, among other advantages, has made it possible to strongly fit the mechanical devices for shifting the rolls upon the housing standards. The schöpf and Tobler oval guides are improvements referred to; they make it possible to do mechanically work which with ordinary wire rod mills could hitherto only be carried out by manual labor. They enable the ordinary German rod mills to be transformed for working automatically in a way similar to that of the American continuous mills.

The author remarks that until 10 years ago the gearing connected with the rolling mills had not received much attention and had remained in a comparative backward state. It had not been subjected in any way to the improvements which had been made in "gearing" for other purposes. The introduction of closed in cogwheel housings having large sized cogwheels running in oil, provided with a good system of bearings lined with white metal, and the greatly improved installation of these housings by connecting them in different ways to the engine frame, have largely contributed to render the rolling mills more safe working. Comparisons are made between older and newer types of mills, in order to show that rolling mill driving has attained to its present satisfactory development owing in a very great measure to the great improvement in the cogwheel housings referred to and the use of better couplings.

In the matter of the engines for driving the mills, it is pointed out that there is exceedingly good evidence in favor of electric driving, an effect of which has been to stimulate builders of engines for steam driving, particularly in the case of reversing engines; steam reversing engines for driving mills have been greatly improved of late and show most favorable figures for steam consumption. The electric driving of small mills has been specially improved, three-phase motors being now used, provided with devices which allow of variations in the speed of the mills, instead of using the one speed which formerly was alone possible with the three-phase motors. The paper shows three such arrangements, with illustrations.

The fourth part of the paper, dealing with the accessory machinery for feeding the rolls and conveying the rolled product until the final section be reached, goes into the subject in detail. The improvements in regard to live rollers, raising platforms, bloom shears, hot beds, sleeper presses, straightening machines, particularly in the matter of beams and railroad material manufacture, are reviewed.

The finishing of small sections after leaving the rolls is specially dealt with, the paper describing the improved devices which have become necessary to cope with the increased output due to the increase in efficiency of the plant and to the use of larger ingots. The improvements have been such that the rolled product on leaving the rolls is automatically cut, straightened, cooled and further conveyed for cutting up into the required lengths, all these operations being effected by one man acting upon one single lever. The author shows in this review the extraordinary progress made in rolling mill construction within the last 10 years, and the way in which German engineers, by adequate installations, have been able to meet the constantly increasing demands made upon the efficiency of the mills.

Dr. J. Puppe followed with a paper on "The Latest Results of the Study of Rolling Mills in Germany." It is supplementary to the brilliant investigations which Dr. Puppe has carried out for some years under the auspices of the German Society of Iron Makers and which were published last year in the form of a volume which this year has been translated into English. Extended abstracts from the work were printed in *The Iron Age*.* Dr. Puppe's investigations constitute really the first serious study of the power requirements for shaping metal in the rolling mill, a field practically untouched by scientific investigation before.

Otto Mauritz of Nuremberg brought forward a contribution on

The Cost of Various Methods of Driving Steel Works Blowing Engines

Until now the piston steam engine has been generally used for driving steel works blowing engines. For new works there should be taken into consideration the use of a steam turbo blower, while at old works even in the purchase of a blowing engine a turbo blower would not be entertained, because it cannot compete in cost with the piston engine, usually only low superheat being available. The peculiarities of steel works practice, frequently interrupted working and wide fluctuations in volume and pressure of blast when compared with blast furnace blowing engines seem apparently to tell against the employment of gas engines. This accounts for the fact that so few German works have selected gas engines for driving steel works blowing engines, although the advantage in low cost of operation is very great. A gas blowing engine is naturally operated in a different manner from a steam blowing engine. The former is not stopped during the pauses in blowing, but it is allowed to run at reduced speed, which involves some consumption of fuel—a loss, however, which is not larger than the loss by condensation in the pipe line of steam blowing engines during these pauses. Mr. Mauritz takes as the basis of his comparisons a steel plant with an annual production of 400,000 tons of ingots. The annual cost of running a 4000-hp. blowing engine is:

1. Sinking fund and interest:
   Engine and foundations.....12 per cent.
   Building ..... 6 per cent.
2. Water consumption per ton of steel ingots:
   Steam blowing engine.....7.3 cu. m. = 258 cu. ft.
   Gas driven engine.....2.4 cu. m. = 85 cu. ft.
   Electrically driven engine.....0.125 cu. m. = 4 cu. ft.
   1 cu. m. is reckoned to cost 1 pf. (3d. per 1000 cu. ft.)
3. Wages, lubricant, material for cleaning and maintenance, repairs, per ton of steel ingots:
   Steam blowing engine, coal-fired boilers..0.139 m. = 1.4 d.
   Steam blowing engine gas-fired boilers....0.088 m. = 0.9 d.
   Gas driven blast engine.....0.88 m. = 0.9 d.
   Electrically driven boilers.....0.015 m. = 0.1 d.†
4. Cost of fuel or of electric current.

With a view to comparison on a common basis, the fuel costs are reckoned within the following limits:

1 ton of coal (7.5 evaporative power) 10 to 20 marks (10 to 20 shillings) 1000 c. m. (35,320 cu. ft.) blast furnace gas 900 w.e. (101 B.t.u.) 0.90 to 1.80 marks (9 d. to 1 s. 8 d.).

In valuing the blast furnace gas, the volume of this gas taken was that equal to the weight of coal required to generate the same volume of steam. An efficiency of 75 per cent. was reckoned upon in the case of the coal-fired boilers, and an efficiency of 53 per cent. in that of the gas-fired boilers. The cost of the steam remains therefore the same in both cases, whether using coal of 7.5 evaporative power at 10 marks per ton, or blast furnace gas of 900 w. e. at 0.90 mark per 1000 c. m.

The cost for electric power is more difficult to state than that for coal or blast furnace gas; in the case of current it would be necessary to consider both whether it be produced by a steam turbine plant (boilers either coal or gas-fired) or in a gas-driven generating station. With a view to deal fairly also with this point, the diagrams apply to a current cost varying from 1.5 pf. to 3 pf. (0.15 to 0.3 d.) per kilowatt hour. This is not to be taken to imply that where coal costs 10 marks per ton, the kilowatt hour should be valued at 1.5 pf.

The higher and the lower limit of running cost is as follows:

Type of blowing engines.	Cost: 1 ton coal = 10 m., or 1000 cu. m. gas = 0.9 m., or 1 kw.-h. = 1.5 pf. Marks.	£	Cost: 1 ton coal = 20 m., or 1000 cu. m. gas = 1.8 m., or 1 kw.-h. = 3 pf. Marks.	£
Steam, coal-fired boilers	268,800	= 13,440	401,000	= 20,050
Steam, gas-fired boilers	255,800	= 12,790	388,000	= 19,400
Gas driven blowing engines	156,500	= 7,825	206,900	= 10,345
Electrically driven reciprocating blowing engines	194,500	= 9,725	344,500	= 17,225

The above comparison which applies to a new plant (case 1) shows the great superiority of gas engine driving.

* *The Iron Age*, March 11, 1909, page 810.

† This figure does not take into account the electric generating set; the cost for this is included in that for the current.

The paper also considers whether a gas-driven blowing engine would be economical in the two following cases.

Case 2. That of a metallurgical works owning a steam-driven blowing engine the cost of which has been written off.

Case 3. That of a similar works whose steam-driven blowing engine is not yet written off. The annual provisions for sinking fund and for interest have therefore to be added to the annual cost of working the gas-driven engine.

The paper shows that here also the gas-driven blowing engine is the most advantageous, since the annual saving in running cost which it yields, as against a steam-driven blowing engine using gas-fired boilers, is as follows:

In case 1a..	99,300 m. = £4,965	In case a, cheapest fuel cost 10 marks per ton.
In case 1b..	181,900 m. = £9,095	
In case 2a..	39,300 m. = £1,965	
In case 2b..	121,900 m. = £6,095	In case b, highest fuel cost 20 marks per ton.
In case 3a..	39,300 m. = £1,965	
In case 3b..	121,900 m. = £6,095	

The saving in case 2 and 3 is equal, the absolute cost figures vary.

Simplicity, accessibility and uniformity of the plant, i. e. complete electrification, might finally lead to the putting down of an electrically driven blowing engine (turbo compressors), if purely economical conditions be aimed at. The conditions, however, require careful consideration for arriving at a correct solution. And when this is reached there is still to settle the point as to whether the current generating dynamos are to be driven by gas engines or steam turbines. Under this head the author concludes that a gas-driven power station is by far the more advantageous of the two.

A. Greiner, general manager of the Cockerill Works of Belgium, stated that of the 27 gas engines now being built at his works, four are for steel works blowing engines. Regenbogen insisted that in a comparison of costs the furnace gas must be put in at its local market value and not on the basis of its calorific value, and the point was also brought out that gas engines are usually underloaded.

A very elaborate paper followed by Prof. E. Heyn of the Royal Testing Bureau of Gross Lichterfelde, on

The Corrosion of Iron and Steel

It deals with the tests carried out in conjunction with Professor Bauer, the following conclusions being drawn: While the kinds of material used—steel, wrought iron and cast iron—do not show notable differences in the attack of rust in still water, such differences do appear in flowing water. The cast iron used is then generally attacked more vigorously than the wrought iron and steel used. The apparent advantage of cast iron over steel is partly offset by the fact that in flowing water steel is attacked in a very irregular manner so that spots attacked but little vary with spots much corroded, on the same sample. With the cast iron used the attack is considerably more uniform.

The measure of the attack by rust of steel and cast iron is dependent upon the speed of the flow of the water. With increasing speed the attack increases at first in order to decline again when a maximum has been passed.

In a strongly agitated solution of salt, the differences in the degree of attack of steel, wrought iron and cast iron decrease.

The color of the rust on cast iron and on steel becomes darker as the speed of the water increases.

The last paper was that of Dr. B. Schweck of Berlin, on a

"New Method for the Production of Hydrogen and Its Application to Metallurgy,"

invented by Dr. A. Frank and Dr. N. Carc, who worked it out in collaboration with Prof. C. von Linde.

The inventors started with water gas, which, after separating the carbonic acid and after compression, they cooled with liquid air, then separating quantitatively, in a liquid state, the main portions of carbon monoxide and nitrogen as well as the sulphur and phosphorus combinations. There remains technically a hydrogen gas containing over 95 per cent. hydrogen, 3 to 4 per cent. carbon monoxide and 1 to 2 per cent. nitrogen, and also a carbon monoxide gas of 85 per cent. in round figures, which used in a gas motor supplies the power required by the plant. The liquid air for cooling yields after rectification a pure oxygen in any required quantity. This simultaneous yield of hydrogen and oxygen in one apparatus renders the process eminently suitable for application to autogenous welding and to metallurgical purposes for smelting at high temperatures, since the gases can be obtained at a very much lower cost than was heretofore possible, the gases being moreover free from noxious substances.

The session closed with formal thanks by delegates representing the French and English members to the presiding officer. During the course of the sessions representatives of different countries had alternately conducted the proceedings as honorary presidents.

PAPERS ON THEORETICAL METALLURGY

Your correspondent was not able to attend the sessions of the other sections. The range covered by the section of Theoretical Metallurgy may be appreciated from the following list of papers:

DR. C. BENEDICKS, Upsala, Sweden, "The Production of Artificial Meteoric Iron."
PROFESSOR DR. BORCHERS, Aix-la-Chapelle, "The Reactions During Copper Refining and Matte Smelting, Their Acceleration and Simplification by Electric Smelting."
DR. BORNEMANN and PAUL MUELLER, Aix-la-Chapelle, "The Electric Conductivity of Liquid Alloys."
DR. H. BRAUNE and EDW. HUBENDICK, Stockholm, Sweden, "Production of Tar Free Producer Gases from Uncoked Fuel, from the Standpoint of Organic Chemistry."
C. BRISKER, Leoben, Austria, "On the Theoretical and Practical Value of the Electric Blast Furnace."
G. CHARPY, Montlucon, France, "On the Importance of Carbon and Carbon Monoxide in Metallurgical Processes."
DR. WALTER CONRAD, Vienna, "On Current and Tension in the Electric Furnace."
W. G. GILHAUSEN, Aix-la-Chapelle, "Researches on the Heat and Substance Balances of the Blast Furnace."
DR. P. GOERENS, Aix-la-Chapelle, "On Gas Inclusions in Various Steels."
DR. H. GROSSMAN, Berlin, "On the Quantitative Determination of Nickel and Cobalt."
LEON GUILLET, Paris, France, "The Thermic Treatment of Special Steels."
LEON GUILLET, Paris, France, "Cementation Considered from the Practical and Theoretical Standpoints."
A. JORSTEN, Aix-la-Chapelle, "Influence of Heat Treatment Upon the Size of Grains of Iron."
PROF. JOS. W. RICHARDS, South Bethlehem, Pa., "Gruner's Ideal Working of the blast Furnace."
PROF. JOS. W. RICHARDS, South Bethlehem, Pa., "The Rationale of Dried Blast."
E. RICHARME, Zarizinsky-Sawod, "On Dephosphorization of Steel in the Presence of Carbon."
DR. RUER, Aix-la-Chapelle, "The Iron-Nickel System."
O. THALLNER, Remscheid, "Relations Between the Thermic Effect, Metallurgical Phenomena and Crystallization in the Basic and Acid Electric Smelting Processes."
F. WEYL, Aix-la-Chapelle, "Cementation in a Vacuum."
DR. WINTER, Bochum, "On the Influence of Galvanizing on the Strength of wire."
DR. WUEST and DR. FELSER, Aix-la-Chapelle, "The Influence of Liquation on the Strength of Ingot Iron."
DR. WUEST, Aix-la-Chapelle, "On Saving Fuel and Increasing the Production of Blast Furnaces by Hot and Dry Blast."

PAPERS ON APPLIED MECHANICS

Although relatively the smallest in the matter of attendance, the section of Applied Mechanics, too, took up an important series of papers, the titles of which were:

M. ANDROUIN and CH. M. STEIN, Paris, "Influence of the Improvement of Methods of Heating on the Development of Mechanical Forging."
TH. V. BAVIER, Düsseldorf, "The Development of Ventilators and Compressors in German Mining."
PETER BERNSTEIN, Cologne, "Hydraulic Compressors."
PAUL BODENSTEIN, Cologne, "The Present Status of Ore Concentration."
W. ELLINGEN, Cologne, "Aerial Ropeways of Great Capacities."
GILLER, Mülheim (Ruhr), "Haulage by Compressed Air Locomotives in Mining."
G. V. HANFFSTENGEL, Leipzig, "The Cheapening of Haulage by Wire Rope and Electric Suspended Railways."
M. HEYM, Wetter, Ruhr, "The Influence of Electricity on the Development and Efficiency of Lifting Appliances in Mining and Steel Works."
DR. HUGO HOFFMANN, Bochum, "The Managing of Power Engines, and in Particular of Winding and Rolling Mill Engines and Dynamos."
PROF. PAUL LANGER, Aix-la-Chapelle, "Recent Experience in Large Gas Engine Installations."
K. MALEYKA, Berlin, "Electricity in Metallurgical Work."
C. MATSCHOX, Berlin, "The Part Played by Mining and Metallurgy in the History of Engineering."
W. PHILIPPI, Berlin, "Electricity in Mining."
DR. RATEAU, Paris, France, "The Turbo Compressors."
STACH, Bochum, "The Development of Separate and Central Condensation."
STACH, Bochum, "Heat-Storage Tanks for the Utilization of Exhaust Steam."
FR. TILLMANN, Saarbrücken, "Underground Haulage."

WORKS EXCURSIONS AND SOCIAL FEATURES

Tuesday afternoon was given to the first of a series of well managed visits to a large number of iron and steel plants, collieries, machine shops, harbor and other municipal works, &c., and to geological excursions, to which the whole of Wednesday and Thursday were also devoted. The iron works thrown open to the congress were Deutscher Kaiser, of Thyssen & Co. at Bruckhausen, Rheinische Stahlwerke at Meiderich, Phoenix at Ruhrort, Friedrich-Alfred Huette of Krupp at Rheinhausen, the Lindenberg Electric Steel Works at Remscheid, the Electric Steel Works of Moenkemoeller at Bonn, Rothe Erde at Aix-la-Chapelle, Hoesch, Hoerde, Union at Dortmund and Gutehoffnungshuette at Oberhausen and the

Becker Electric Steel plant at Willich. Among the shops inspected were those of Haniel & Lueg, Ernst Schiess, Sack and J. P. Piedboeuf & Co. of Duesseldorf; Bechem & Keetmann of Duisburg, and Gasmotoremfabrik, Dentz, and Humboldt of Cologne. A well bound little volume, with map, gave a brief account of all the plants visited.

Visit to an Electric Steel Plant

On Wednesday, June 22, a special trip was made into the Berg district as one of the many excursions. It included a visit to the electric steel plant at Remscheid of the Richard Lindenberg Company. This company was the host at a lunch at the famous Remscheid dam, of both the men who had inspected the plant and of the ladies who had gone over the suspended railroad over the Wapper River, between Barmen and Elberfeld, and had been shown the fine Kaiser Bridge at Muengsten.

The Lindenberg Steel Works is the first plant which developed the manufacture of electric steel on a commercial basis, and it has been manufacturing regularly special high grade steels for a series of years, including chrome, nickel and tungsten and carbon steels for a variety of purposes. The steel plant consists of a 6-ton Wellman tilting open hearth furnace, basic lined, and one 3-ton basic and one 1¾-ton acid Heroult two-phase electric furnace. While formerly the practice was to treat the crude steel from the open hearth furnace in one Heroult basic lined furnace, there has been recently added the second acid lined furnace, the Lindenberg brothers having developed and patented a process for the production of an electric steel low in silicon in the acid furnace. They now have the alternative of refining the open hearth metal in the acid or in the basic electric furnace, or of treating it first in the basic and finishing in the acid furnace—an opportunity of which they avail themselves to produce special steels to best advantage. Thus tungsten steels are best made in the acid furnace, although it does involve some loss of metal, while chrome steels are produced invariably in the basic furnace. The requirements are exacting and varied, yet the managers have adopted a series of preliminary forging and tempering tests which enable them to ascertain whether the desired quality has been attained. The precision with which prescribed chemical composition can be attained is the one extraordinary and valuable feature of the electric furnace, so that it may really be called a laboratory on a large scale in its accuracy. A number of heats were made in both furnaces, the steel being cast into bottom poured round ingots, which looked clean and sound, in spite of very short sinkbeads. The plant is equipped with a series of hammers and with a mill for rolling bars, strips and sheets. The firm is soon to establish an agency for the sale of its steels in New York.

Brilliant Entertainments

The municipality of Duesseldorf was the host Monday evening at a reception in the Tonhalle, which was really an elaborate dinner and a concert by two military bands.

On Tuesday evening a brilliant company assembled to participate in the banquet, over 1000 ladies and gentlemen being seated in the two great adjoining halls of the Tonhalle. The one crowning success of the occasion was the performance of the festal play, which followed immediately upon the conclusion of the dinner. The stage of the larger hall had been converted into a striking reproduction of a steel plant, with hammer, open hearth furnace, cast house and ladle crane, the decorations having been painted by George Hacker, a Duesseldorf artist, from designs of the Duisburg Maschinenbau A. G. Vorm. Bechem & Keetmann of Duisburg. The performance began with the playing of the forging song from Richard Wagner's Siegfried with anvil accompaniment, the curtain rising upon an animated scene. The forge master, a very vigorous person, announces that the Entertainment Committee of the Congress has imposed upon the works the task of furnishing a steel band 25,000 miles in length, the specifications calling for infinite tensile strength and tenacity, it being a matter of indifference whether it be open hearth or Bessemer, acid or basic. He is interrupted by the doubts and exclamations of English, French, Italian, Russian and Swedish workmen, very cleverly imitated as to their characteristics, and then invokes the aid of Vulcan. Accompanied by the forging song of the Georgs Marienhuette, timed with anvil blows, the charge of steel is tapped, the ladle crane brings on the ladle and the cast is made. Then the stripper is brought forward, but instead of the expected big ingot there appears, in the glare of light, the Genius of Technology in the form of a white robed woman, who, stepping forward, delivers a poem glorifying the achievements of the modern mechanical arts, which represent the steel band embracing the whole world. The men of different nationalities are commanded to clasp hands and warned never to forget, even in the midst of struggle, that it is man's work which carries all upward. With words of greeting the closing invocation is that work and play may unite to strengthen the band of steel. The actress who had very cleverly delivered the lines was showered with the roses which decorated the tables, and the applause was prolonged and exceedingly hearty. The play, which was entitled "The Masterpiece of the International Steel Works, Ltd., Société Anonyme," was composed by Dr. P. Gabein and Dr. M. Philips from the suggestion of Dr. Schroedter, who was forced to appear before the audience to receive its greetings. A series of toasts followed. Great enthusiasm was evoked by the announcement during the banquet that Count Zeppelin had started for Duesseldorf with his airship and would join the party the next evening on the excursion on the Rhine. Then the company adjourned to the adjoining gardens.

Enthusiasm Over Count Zeppelin and the Airship

Although the weather had become very unfavorable and rain was falling heavily, it was a very large party which gathered Wednesday evening on the special steamer for a trip on the Rhine, the great attraction being that Count Zeppelin, who had in the meantime made his remarkable flight from Friedrichshafen to Duesseldorf, would be present. It may seem extraordinary what unbounded enthusiasm the German people, high and low, have shown for this venerable aeronaut. National pride can account for only a part of it. It is really principally the personality of the man, who, although well into the seventies, possesses unusual pluck, vigor and earnestness, coupled with a charming, almost modest, demeanor. In the pouring rain large crowds stood for hours in front of the hotel after his arrival hoping to catch a glimpse of their hero, and cheering frantically at the appearance of any person they were led to hope was Zeppelin. Decorated in youth during the Franco-Prussian war with the highest distinction a German soldier can attain, the Iron Cross of the First Class, for a daring riding feat, Count Zeppelin did not take up aeronautics until he had been retired, a general, for age. He staked his entire personal fortune and all the money he could raise from his friends. The head of the greatest steel selling organization told your correspondent that his earnestness and good faith were so convincing that he was furnished the steel for a great garage building with the understanding that he could only pay for it if his efforts ended in success—a proposition to which at the outstart there was little disposition to accede.

On the next day the airship, which had been taken over according to contract by the "Delag," a company organized to operate it, as the result of successful trips,

began its public flights with 20 passengers. One of the participants who had succeeded in securing a ticket was Harold Jeans, the editor of the *Iron and Coal Trades Review* of London, whose interesting account of the trip induced your correspondent to book for the next ascension. Persistently adverse weather for four days, during which he waited, made any trips of the airship impossible, and he was forced to forego the experience.

A peculiar condition affects the ability of the airship to start on its journeys. It is not so much a question of the force but of the direction of the wind with reference to the longitudinal axis of the great garage in which it is housed. When the wind is at right angles to the shed it is too risky to draw the huge airship out of it. A few figures are given, in an official communication to the press, to make this clear. When the wind strikes the airship on end it slips off readily from the pointed end and from the sides of the long body, exerting a pressure which even during a storm does not exceed 800 kg. When the wind blows in the direction of the axis of the shed, the airship can easily be brought out by few men. But when the wind is at right angles to the axis of the shed, the pressure rises quickly to 8000 or 10,000 kg. and upwards. When under such conditions the airship is slowly drawn out of its shed, the pressure grows as the long body begins to protrude, and when about three-quarters of the length has been hauled out becomes so great that the crew cannot control it. It is pushed aside and the part remaining in the shed is buckled. The Duesseldorf shed, which was built by the municipality, is stationary. It has been proposed to build round sheds, so that the airship can be brought out whatever the direction of the wind, but as yet the question of the best design for a shed which will meet all conditions of weather has not been solved in a satisfactory manner.

The Last Function

On Thursday afternoon the proceedings of the Congress were brought to a brilliant close by a garden party in the Town Hall at Essen, after an inspection of the Krupp colonies and other institutions. It was on this occasion that the invitation was issued and accepted to hold the next International Congress in England in 1915.

On the invitation of the directors of the International Exhibition of Brussels and the commissioner of the German Empire, about 400 of the delegates took part in an excursion to Brussels, there being a formal reception in the German section on Friday evening, a dinner at the "Chien Vert" concluding with fireworks on Saturday evening and a reception in the Town Hall by the city of Brussels on Sunday evening.

The Oliver Chilled Plow Works, South Bend, Ind., has plans under way for additional buildings which will give it an increase of about 100 per cent. in the capacity of its plant. The building work which is under way is largely the reconstruction of old buildings, but new additions and entirely new structures are being erected. Equipment required has been contracted for and includes board and rope drop hammers, bulldozers, punches, shears, grinders, lathes, planers, drill presses, milling machines and woodworking tools. A steam turbine, boiler, air compressor, additional pumps, together with the usual complement of shafting, hangers, trolley lines, &c., have been installed in the power plant.

The Higbee Iron Company has been incorporated to develop a tract of 160 acres of iron land on the Mesaba range, near Hibbing, Minn. The company is capitalized at $100,000. R. B. Higbee of St. Paul is president and George Salzer, a lumberman of Minneapolis, is vice-president.

Customs Decisions

Old Steel Rails Not Dutiable as Scrap

Old steel rails are still "rails," according to a recent decision made by the Board of United States General Appraisers adverse to a contention of the Benjamin Iron & Steel Company. The Government officers assessed duty under the provisions of paragraph 126 of the tariff of 1909, which specifies duty at the rate of 7-40 cent per pound. The importers contended that the rails should be regarded as "old scrap," fit only for remanufacture by melting, and therefore dutiable at the rate of $1 per ton under paragraph 118. They claimed, first, that the steel rails are old scrap; second, that this class of old scrap is to be remelted, and, third, that the shipments comprise only such old rails as are unsuitable for rerolling. General Appraiser Fischer says that all of the points made by the importers may be true, but for reasons stated in a former decision, arising under the Dingley tariff, the merchandise would be excluded from scrap steel, as provided by the express terms of paragraph 118. He adds: "The testimony shows that some of the steel has been actually sold to parties who utilize it for purposes of remanufacture by melting. The proof offered, however, does not satisfy us that steel of this character is not suitable to be commercially remanufactured by process other than by melting. The phrase, 'fit only to be remanufactured by melting,' means unfit for any other remanufacturing purpose, and for the reasons stated in G. A. 7003 we overrule the protests without an affirmance of the decisions of the collector."

Spiegel Mixed with Ferro Is Not "Destroyed"

In overruling a protest filed by the Joseph R. Foard Company, the Board of United States General Appraisers holds that a simple mechanical mixture of two imported metals, due probably to carelsssness in the stowing of the vessel or in the handling of the goods, is not such a damage or destruction of the goods as will excuse the importers from paying duty. Some spiegeleisen was imported at Baltimore. A portion of it was stored in such a way as to become mixed with some ferromanganese. In discharging the vessel the mixed portion of the cargo was divided so as to give the importers of the spiegeleisen their full weight. The Foard Company, however, alleged that 7150 lb. in weight which they received was so mingled with ferromanganese and other fine material as to be worthless. Judge Waite in his decision for the board finds that the tariff act of 1909 does not provide for an allowance under the provision for damage or destruction, and that in the case in question there is no injury which prevents the return of the commodity to its original condition.

Rivets for Nonskidding Automobile Tires

The Michelin Tire Company has won a victory before the Board of United States General Appraisers, the assessment of duty imposed by Collector Loeb on rivets or studs for anti-skid tires being set aside and lower duty granted. The rivets are about ½ in. in length, with a flat head. Duty was assessed at 45 per cent. under the provisions of paragraph 167 of the new tariff act, as "rivets for nonskidding automobile tires." The importers claimed that the articles are dutiable properly at 1¼ cents per pound as "rivets of iron or steel not specially provided for." The testimony showed that the rivet after importation is machined and later heated and case hardened. General Appraiser Fischer in his decision sustaining the protest, says: "As imported the rivets are not used for anti-skid tires; they are in the finished form of an ordinary steel rivet, and do not afford sufficient evidence as to their special adaptation for use for nonskidding tires as would warrant their classification under that clause."

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ingots, deoxydation and handling of materials. This tabulation is as follows:

	Basic Bessemer. Tons.	Marks.	Marks.	Basic open hearth. Tons.	Marks.	Marks.
Pig iron	1,000 at	40 =	40,000	1,000 at	38.5 =	38,500
Lime	140 at	9.7 =	1,358	....	...	.....
Limestone	...	..	.....	223.6 at	5 =	1,118
Ore	...	..	.....	283.7 at	25 =	7,092
Manganese ore	...	..	.....	10 at	50 =	500
Blast furnace gas.	890 at	2 =	1,780	....	...	.....
Producer gas	...	..	.....	1,103 at	4 =	4,412
Wages	890 at	1.3 =	1,157	1,103 at	3 =	3,309
Furnace repairs	...	..	.....	1,103 at	2 =	1,206
Totals			49,295			57,137
Steel produced			890 tons.			1,103 tons.
Items of cost per ton of steel			49.76 marks.			51.80 marks.

Since the same amount of phosphorus is available in the 1000 tons of pig iron, the allowance for sale of phosphate slag is the same in both cases. Esser concludes by quoting Mark Twain's statement: "The news of my death is grossly exaggerated." C. K.

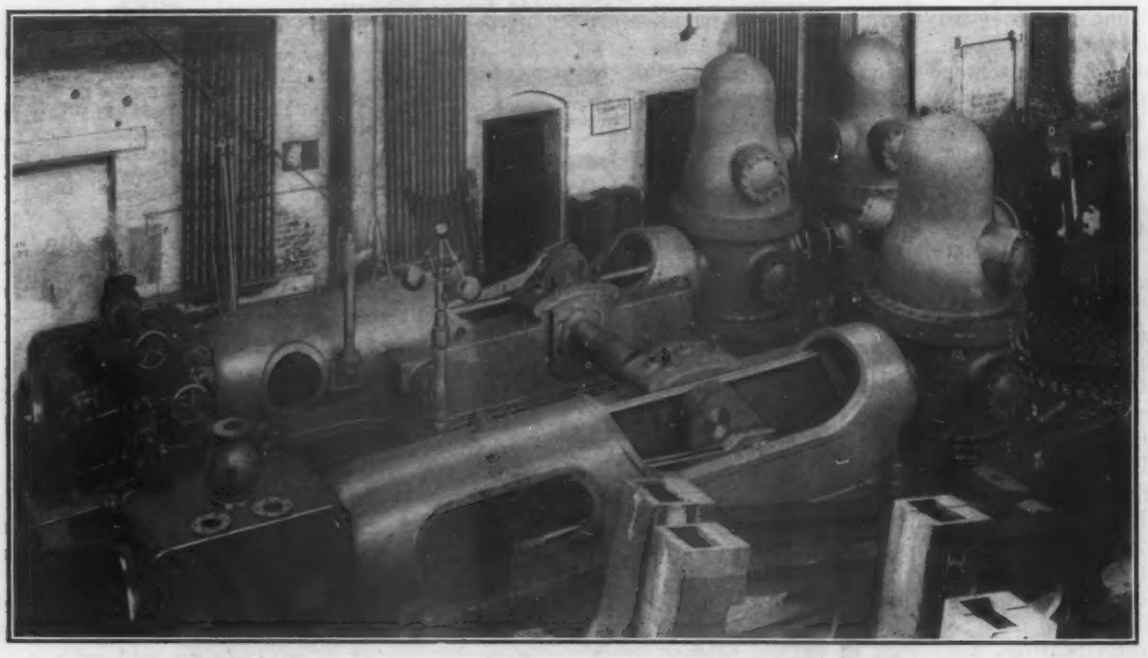
Cooper Engine Contracts.—The C. & G. Cooper Company, Mount Vernon, Ohio, has been awarded contract by the Republic Iron & Steel Company for two 1500-hp. cross compound condensing Corliss engines, to be installed at the Haselton blast furnaces at Haselton, Ohio. These engines will drive two 1000-kw. Crocker-Wheeler direct current generators, and will furnish power for the new pipe mills of the Republic Company at Lansingville. They will complete a series of six compound Cooper engines for electrical purposes installed for the Republic Company in the Youngstown district. The Cooper Company has also received a contract from the Follansbee Brothers Company, Pittsburgh, for power transmission machinery to drive a new train of hot mills at Follansbee, W. Va.; this equipment includes rope wheels, shafts, pillow blocks, &c. It also has a contract from the Gleason Works, Rochester, N. Y., machine tool builders, for a simple heavy duty Corliss engine to drive a 250-kw. direct connected generator, which will furnish power for the works, including extensive additions now being erected.

The St. Louis Foundry Foremen's Association held its monthly meeting July 9 at the Missouri Athletic Club. The topic of the evening was "Cupola Practice." J. P. Pero is president of the association, and the secretary is C. Roy Rook, 1445 Syndicate Trust Building.

Allis-Chalmers Fire Pumps for Baltimore

The Allis-Chalmers Company, Milwaukee, Wis., has recently built three new high pressure fire service pumping engines to supply the high pressure fire protection lines of the city of Baltimore, Md. The three pumps, one of which is shown in the accompanying illustration, are complete in the shops of the maker awaiting the construction of the new pumping station being built by the city. These pumps will take their supply from the regular city water mains, but provisions have been made for an additional supply from the harbor.

The type of machinery selected by the Baltimore authorities is interesting, as it differs from that used by other large cities for fire protection. The pumping engines are of the company's horizontal, twin duplex, crank and flywheel type, with steam cylinders 22 and 22 x 36 in., and pump plungers 13¼ in. in diameter. Each pump has been designed to deliver 3000 gal. of water per minute against a total head of 150 lb., but they are also capable of pumping against a maximum pressure of 300 lb. per square inch.



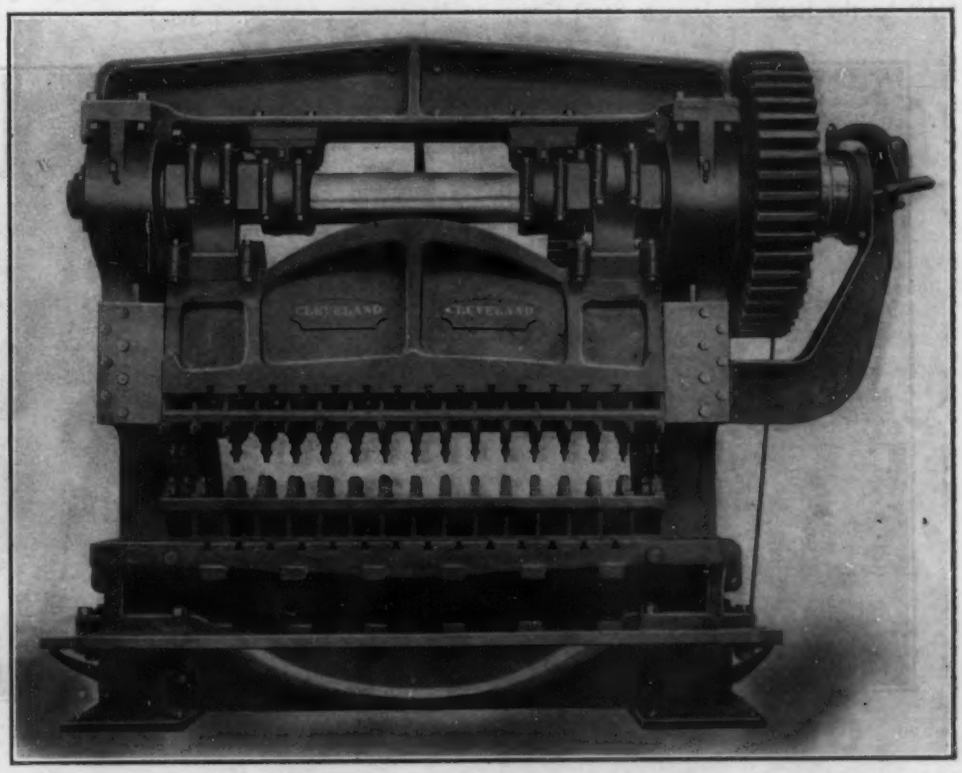
One of the Pumping Engines for the Baltimore Fire Service, Partly Erected in the Shops of the Allis-Chalmers Company.

New York City has pumping stations equipped with Allis-Chalmers motor driven centrifugal pumps. Philadelphia, where the first high pressure system was installed, employs geared triplex pumps, built by the Deane Steam Pump Company, driven by Westinghouse three cylinder vertical gas engines, as there are enough independent sources of gas supply to make the system absolutely reliable. Both these systems have been very satisfactory in their operation. The Philadelphia system was described in *The Iron Age*, January 21, 1904 and an illustrated description of the New York installation with a report of the tests made was printed in the issue of October 21, 1909. The next large municipality to install high pressure fire protection apparatus was San Francisco, where the work was begun immediately after the earthquake and fire which destroyed the entire business section of the city. Centrifugal pumps driven by steam turbines were selected for both the land station and the fireboat equipment, using oil for fuel under steam boilers. Baltimore selected steam engine driven reciprocating pumps. When this system is completed and placed in service the insurance rates will be much less and a great conflagration such as that experienced in 1904, in which property valued at over $1,000,000 was destroyed, will be rendered practically impossible.

A Large Cleveland Multiple Punch

A new type of multiple punch that is of interest not only because of its size, but because its two rows of punches are adjustable, has recently been built by the Cleveland Punch & Shear Works Company, Cleveland, Ohio, for the Pressed Steel Car Company, Pittsburgh, Pa. Having the rows of punches adjustable permits the punching of tapering lines of holes, which is often desired in punching the holes in the stakes for pressed steel freight cars. It is claimed that with all other machines of the character only parallel rows of holes can be punched. This machine is designed particularly for punching holes in pressed steel stakes, and all of the holes are made with one operation of the machine.

The punch, which is known as the No. 6 multiple stake punch and, as shown in the accompanying illustration, is equipped with 34 punches, although a similar machine having 40 punches in one row was recently made by the Cleveland Punch & Shear Works Company for the Pressed Steel Car Company, that being the largest punch ever made. The machine illustrated is capable of punching 40 $\frac{15}{16}$-in. holes through a $\frac{5}{8}$-in. plate. This machine is 13 ft. 11½ in. high, 17 ft. 4⅞ in. long and 11 ft. 2 in. wide. The width of the plunger is 20 in. and the width of the girder 27¾ in., giving that amount of surface for the tool holders. The distance between housings is 10 ft. 2 in. and the gap is 14 in. The total weight is 168,000 lb.



A Large Multiple Punch Built by the Cleveland Punch & Shear Works Company for the Pressed Steel Car Company.

This machine is a standard Cleveland multiple punch with steel automatic clutch and steel main gear. There are four main shaft bearings. The housing bearings are 17 in. long and 12¼ in. in diameter. The length of the bearings inside the pitman is 12 in. and the diameter 12¼ in. The machine has a 6-in. stroke. The housings are semi-steel castings and the shaft is hammered steel. The bolster blocks are cast steel. All bearings are bushed. Through bolts with castled nuts are used wherever possible. The sliding crosshead is counterbalanced with weights hung on levers.

There are two rows of punches parallel to the shaft, there being 17 gagged punches in each row, mounted on bolster blocks. The minimum adjustment of the punches between centers is 2¼ in. and the maximum adjustment 10 ft. The minimum adjustment of the rows of punches is 3 in. and the maximum 7 in. The bolster blocks are so arranged that when parallel rows of holes are not desired the rows can be diverted from 3-in. minimum to 5½-in. maximum. This is done by the use of specially arranged T slots.

The machine is motor driven, being equipped with a 30-hp. Westinghouse motor directly connected to the flywheel shaft through cut gears, the power being transmitted through an intermediate shaft, steel gears and steel pinion meshing the main shaft gear or clutch gear.

Dodge Brothers' New Plant at Detroit

The plant of Dodge Brothers, Detroit, Mich., manufacturers of special machinery, tools, gears and automobile parts, now under course of construction, consists of two main buildings, 65 x 400 ft., four stories, connected at one end by a building, 65 x 105 ft., four stories, and by steel bridges at the other end. These buildings are of reinforced concrete, fireproof construction, with metal windows, with floors to carry 100 lb. per square foot, having no beams or girders exposed on the ceilings, and are to be heated and ventilated with a hot air blowing system. There will be installed upon completion of the buildings two freight elevators, 12 x 20 ft., each having a capacity of one-half ton, and another, 12 x 24 ft., of one-ton capacity.

The company also has under course of construction a power plant, 100 x 120 ft., to be equipped with eight 200-hp. return tubular boilers, fitted with Detroit stokers; two Allis-Chalmers cross compound engines, direct connected to 500-kw., 480-volt Bullock alternators; one Ball-Corliss type simple engine, direct connected to 100-kw., 125-volt generator, and one 85-kw. motor generator exciter, set together with a 24-panel switchboard controlling the entire plant. The engine room will be served by an electric traveling crane of 15 tons capacity.

Other structures comprise a drop forging building, 70 x 400 ft., equipped throughout with steam drop hammers and electrically-driven presses, and served by a 10-ton crane, and an office building, 50 x 120 ft., two stories, connected to the factory with a bridge at the second story. All railroad sidings for the entire plant have been depressed, bringing the car floors to the same level as the floors of the factory. Contracts for the entire equipment have been let.

The new 12,000-ton ore boat, the W. J. Olcott, which is being built for the Pittsburgh Steamship Company, was launched at the yards of the Great Lakes Engineering Works, Detroit, July 9. The boat is named in honor of the president of the Oliver Iron Mining Company.

Exposure Tests of Structural Steel Coatings*

Ratings of 530 Different Paints After One-Year and Two-Year Terms of Service

BY CLOYD M. CHAPMAN.

About three and a half years ago Westinghouse, Church, Kerr & Co. exposed to the weather on the roof of the building occupied by them at the southern extremity of Manhattan 24 small steel plates, each coated with a so-called steel preservative paint. The great difference soon noted in the protective value of these paints led to the testing of other paints and coatings, until some 1600 plates have now been exposed, painted with 530 different coatings ,submitted by 271 manufacturers and dealers. The results obtained to date are more or less interesting, according to the conclusions which may be drawn from them. Herein we will state only the facts; the conclusions may be drawn by each reader for himself.

The method employed in most of these tests was as follows: Small samples of the ready mixed paints were submitted by the manufacturer or dealer, together with a statement of the principal ingredients entering into their manufacture. Each paint was applied to two mild steel plates of about No. 16 gauge, 2 in. wide and 6 in. long, which had first been well cleaned of oil and foreign matter by rubbing with a cloth saturated with benzine. Each plate had its number plainly stamped in one corner. One plate was given one coat and the other two coats. Care was taken to give a uniform full coat to both sides and all edges of the plates. All painting was done indoors by the same person. About five days were allowed between coats for drying. After the second coat had dried the plates were fastened to boards with galvanized iron tacks and exposed on the roof at an angle of 45 degrees, facing south. Fig. 1 shows some of these plates on the boards as they are now exposed on the roof.

Fig. 1.—Illustrating Conditions of Exposure Tests for Steel Coatings.

Scratch Marks to Induce Rusting

On the day the plates were exposed scratch marks were made with a sharp instrument across two opposite corners of each plate. These scratch marks cut through the paint film, leaving bright metal exposed, so that rust could and did start immediately along these lines. At regular intervals after exposure each plate was examined and a record made of its condition. The one quality which was being sought, and the prime factor which entered into the rating of the paints, was protection against rust.

An arbitrary scale of ratings was adopted, based on the amount of rust apparent on the plate. Until some small spot of rust appeared the plate was rated at 100 per cent., except in cases of fading, alligatoring, bad chalking, &c., without any rust apparent, which were rated at 97 per cent. When one small spot of rust the size of a pinhead appeared the plate was rated at 90 per cent. When several such spots or one larger spot of rust appeared the plate was rated at 85 per cent. When the sum of the areas of the rust spots totaled an area of about ¼ in. square the plate was rated at 80 per cent.; when ½ in. square, at 75 per cent. When the combined area of rust spots totaled about 1 sq. in. the plate was rated at 70 per cent., and so on down the scale until zero rating indicates the plate entirely rusted on the exposed side. Fig. 2 shows a series of plates in various stages of the progress of the rust from 100 per cent. to zero. Examinations were made and results recorded at the end of two weeks, four weeks, six weeks, 12 weeks and every three months thereafter.

Various Forms of Failure

The scratch marks across the corners of the plates developed some interesting results by showing the

* A paper read at the Atlantic City meeting, June, 1910, of the American Society for Testing Materials.

relative resistance offered by the various coatings to the spread of the rust which got its start where the bright metal was exposed. Fig. 3 shows clearly two rather extreme cases. In one case the coating has failed at many points and the plate has rusted at each of these weak spots, but the coating has not allowed the rust to progress under it, and therefore the rust spots are small and the rust at the scratch mark is still confined within narrow limits. Should this paint be called a good inhibiter and a poor excluder? The other case is that of a paint which has allowed the rust to spread rapidly where it once got a start at the scratch marks, but has not allowed a single spot of rust to start on any other portion of the plate. Is not this evidence of a poor inhibiter, but a good excluder? Both of these plates have been exposed the same length of time.

Another interesting and somewhat curious fact has been noted in these tests. It is that the various classes of pigments fail in characteristic manners. A plate coated with a graphite paint does not rust in the same manner as one coated with red lead or an iron oxide. This difference is illustrated in Fig. 4, which shows the characteristic failures of four classes of paints: carbon, graphite, iron oxide and red lead.

As the test plates were exposed from time to time throughout the year in lots of about 200, it would not be fair to compare the three or six months' rating of a paint exposed in June with the corresponding rating of one exposed in November, after the one had been subjected to warm, dry weather and the other to an equal period of cold, rain and snow. For this reason the one year and two year ratings are compared in all cases, so that all have been exposed to the four seasons in succession one or more times.

The Coatings Classified

As noted above, each manufacturer was asked to state the principal ingredients in his paint, and on the basis of these statements the samples were classified into groups depending upon its chief pigment, or, in the absence of pigments, upon its vehicle. In this way the paints were divided into a number of classes as follows:

Carbons.—In this class are grouped the natural and artificial carbons, except graphite.

Graphites.—This class contains both the natural and artificial graphites.

Iron Oxides.—These also include both the natural and artificial pigments, some of which were received in paste or dry form, to which pure linseed oil was added in our laboratory.

Red Leads.—This class includes both the straight red lead and oil mixed in the laboratory shortly before applying, and the ready mixed red lead paints which contain considerable percentages of other pigments to keep the lead in suspension. These red leads had no other coating over them.

Red Lead Primers.—These consist of tests in which the first coat was a red lead paint, either "ready mixed" or straight red lead and oil, while the second coat was of some other class. Of course, no one-coat tests could be made in this way. The second coats in this class were of widely different varieties.

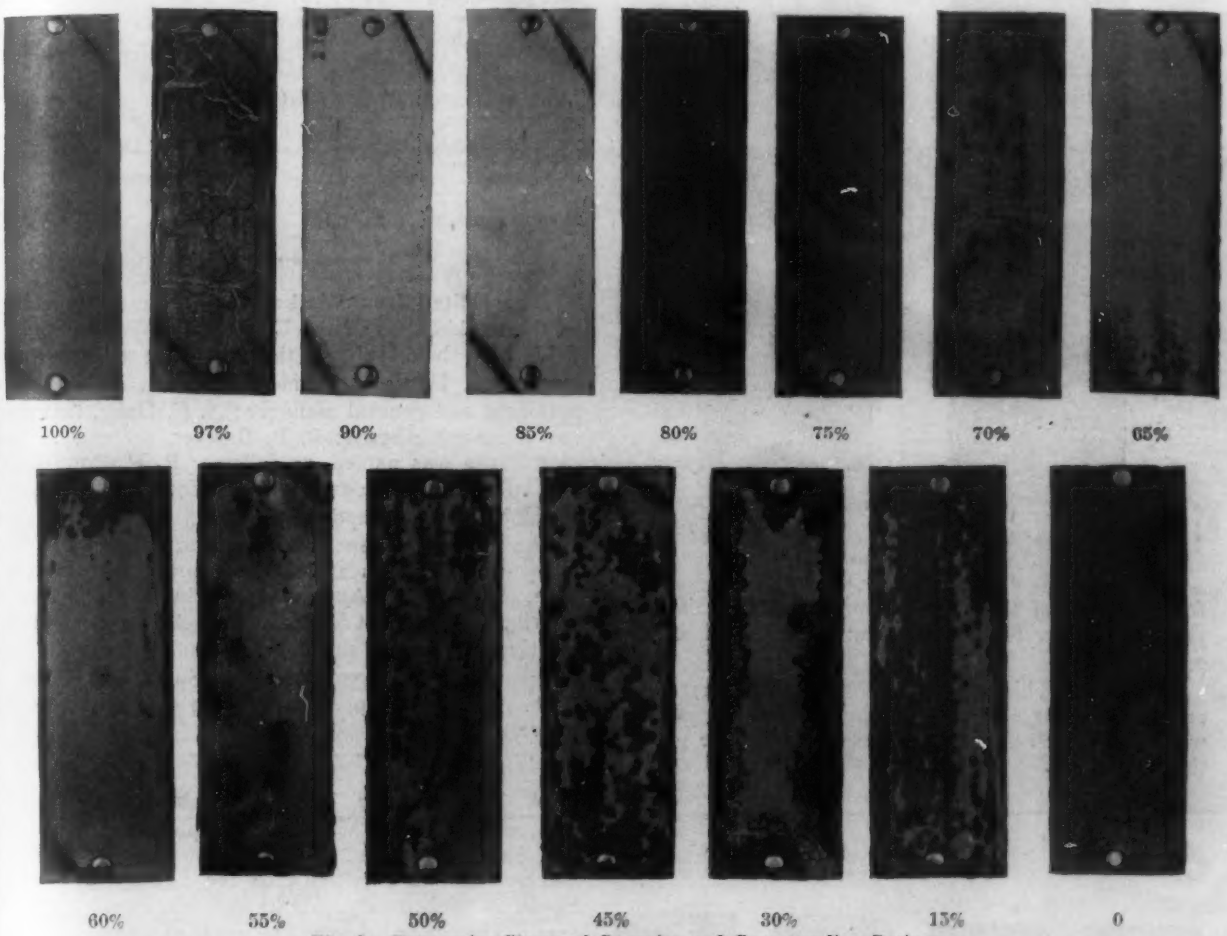


Fig. 2.—Progressive Stages of Corrosion and Corresponding Ratings.

White Leads.—This class is rather surprisingly small, and is made up largely of paints mixed from the paste in our own laboratory.

Zinc Oxides.—Few makers put out a zinc oxide paint for structural steel.

Mineral Hydrocarbons Without Pigments.—This class is composed of paints made of the various kinds of tars and tarry refuse and the various minerals of an asphaltic nature, gilsonite, elaterite, &c., but without any pigments added to them. They form one of the more numerous groups, and as a rule are much lower priced than the oil paints. They also form the class for which the greatest merit is usually claimed by the makers and agents.

Mineral Hydrocarbons With Pigments.—This class is made up of the same character of materials as the last, but with various pigments added. For instance,

a paint made of gas tar and iron oxide would fall in this class rather than in the iron oxide class.

Vegetable Hydrocarbons With and Without Pigments.—This class includes distillates and residual pitches of vegetable oils, &c. They are not numerous enough to divide into two groups, hence those with and those without pigments are placed in the one class.

Cements.—Several manufacturers have acted upon the oft published statement of the fact that Portland cement offers a protection to steel against rust, and have put out a paint said to be made up largely of cement. These paints are here grouped in a class by themselves. As they have appeared in the market mostly within the past two years only one of them has had a full two years' exposure.

Chromates.—Another result of recent paint literature has been the appearance of a number of paints said to contain chromates or chromic acid in some

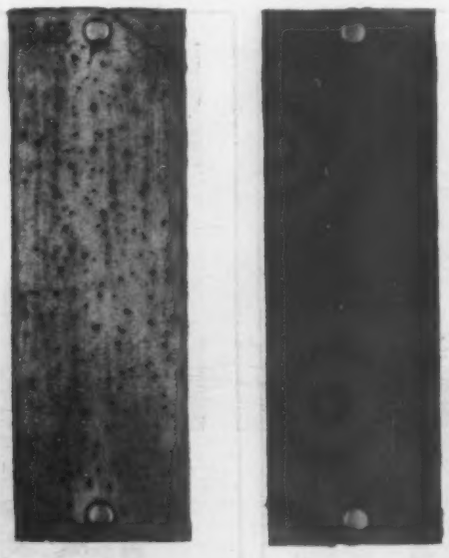
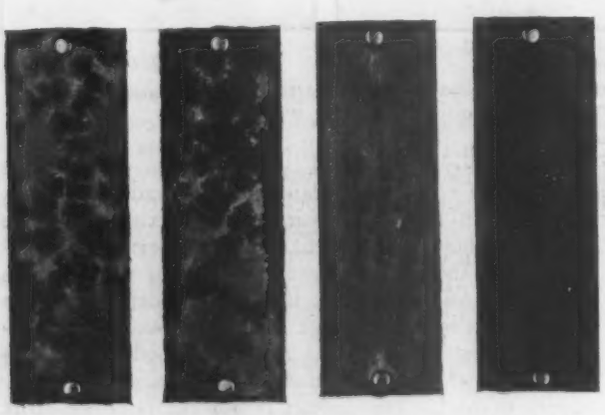


Fig. 3.—Different Ways in Which Corrosion Resulted from Scratch Marks.

form. Some of these have appeared within the past year and no tests of those can be included in this paper.

Vehicles.—This class contains the oils, varnishes and transparent coatings containing little or no pigment, but which are more or less used for the protection of steel.

Miscellaneous.—Into this class are grouped all the coatings which do not fall into one of the above groups or concerning which the maker refused proper information to enable the paint to be classified. Other sub-



Carbon. Graphite. Red Lead. Iron Oxide.

Fig. 4.—Different Types of Corrosion with Different Classes of Paints.

divisions were made in our laboratory records, but they each contained so few representatives that they were all thrown into this miscellaneous class for purposes of comparison in this paper.

The Results Summarized

In the following table is given a summary of the results obtained with each class of paints for one and two year exposures of one and two coat specimens. This table also gives in each case the number of tests which entered into each result:

Table of Results of Exposure Tests of Structural Steel Paints.

	One year exposure.				Two years' exposure.			
	One coat.		Two coats.		One coat.		Two coats.	
Class.	No. of tests.	Aver. rating. Per ct.	No. of tests.	Aver. rating. Per ct.	No. of tests.	Aver. rating. Per ct.	No. of tests.	Aver. rating. Per ct.
Carbons	65	21	54	70	34	2	36	46
Graphites	67	18	56	66	42	3	43	45
Iron oxides	74	35	71	69	52	10	52	46
Red leads	50	58	39	77	19	16	20	61
Red lead primers	0	..	43	75	0	..	14	56
White leads	23	51	11	82	3	0	3	25
Zinc oxides	5	25	5	69	5	3	5	50
Mineral hydrocarbons without pigments	66	20	73	46	36	0	37	18
Mineral hydrocarbons with pigments	10	16	11	53	7	0	7	20
Vegetable hydrocarbons with and without pigments	13	19	13	57	3	0	3	5
Cements	7	36	7	46	1	0	1	0
Chromates	14	32	24	70	9	0	9	39
Vehicles	22	8	7	11	3	0	3	0
Miscellaneous	94	28	103	67	70	7	85	39

The United Iron Works.—At the annual meeting of the stockholders of the United Iron Works, Springfield, Mo., held July 1, the following officers were elected: C. H. Cole, president; H. T. Hornsby, vice-president and general manager; A. C. Daily, treasurer and purchasing agent; R. P. Bowyer, secretary. The directorate was named, as follows: R. P. Bowyer, A. C. Daily, J. T. Woodruff, J. R. Woodfill, Jr., and B. F. Hobart. The reports of the officers for the past year showed a prosperous condition of affairs. The company has plants at Iola, Pittsburg and Independence, Kan.; Joplin, Aurora and Springfield, Mo., and a distributing house at Kansas City. At the close of the meeting about 40 stockholders and officers of the company were banqueted at the Springfield Country Club. C. H. Cole, president of the company, was the toastmaster.

A Large Riehle Testing Machine.—The Riehlé Brothers Testing Machine Company, Philadelphia, Pa., has just shipped the largest screw power testing machine it has ever built to the Lehigh University, South Bethlehem, Pa., for its new engineering laboratory. The machine complete weighed 150,000 lb., will take in specimens 28 ft. long, and has a capacity, on two screws, of 800,000 lb. On June 20 an elaborate test of the machine was made at the company's works, among those in attendance being John Fritz, President Drinker, Prof. F. C. McKiblen and G. A. Chandler of Lehigh University, W. A. Lathrop, president of the Lehigh Coal & Navigation Company; Professor Kavanaugh of the University of Minnesota, and a number of other prominent engineers. The machine was tested to its fullest capacity, and met most satisfactorily all requirements.

Some changes have recently been made among officers of the Petroleum Iron Works, Sharon, Pa., builder of heavy iron and steel plate work. A. W. Krause, secretary and treasurer, Charles A. Lytle, E. G. Wright and H. L. Stafford of Pittsburgh, have sold out their holdings to Joseph T. Sweeney of Sistersville, W. Va., representing the majority stockholders. Mr. Krause has resigned as secretary and treasurer and Mr. Sweeney will fill the two positions.

Ajax Electric Riveters

A new riveter, which will punch the hole and drive and head a rivet with one pressure of the pedal, has been placed on the market by the Electrical Machinery Sales Company, Milwaukee, Wis. These tools combine the functions of a riveter and holder-on and a portable riveter, chipping and calking tool. Three styles of tool are built; the bench type, shown in Fig. 1; the pedestal type, shown in Fig. 2, and a portable model. Three sizes of each type are built, and while those illustrated have a self-contained electric motor for operating them, a belt driven model is also made. The average time required to turn a smooth polished head on each end of a stud or wire rod is 1 sec. for any shape of head, and the capacity depends entirely upon the quickness and ability of the operator to place rivets in position. It is stated that from 4000 to 20,000 pieces per day can be handled by inexpensive labor, as a boy or girl can learn to operate the machines in a few moments and turn out good work as rapidly as an experienced or expensive man.

The mechanism is durable and simple and consists of a slidable solid steel revolving disk block, with three special design striking shoes on its lower surface. These shoes strike a resilient plunger, which in its turn delivers the blow directly upon the work to be done. The riveting operation is controlled by the treadle, the force of the blow being proportional to the amount of pressure applied. Releasing this pressure stops the blow instantaneously. This ability to vary the force of the blow is one of the special features of the Ajax machine, as it will strike the lightest continuous tap, medium or heavy blow, as desired, and the change from one to the other can be made instantly. The hammer runs continuously, so that there is no delay in starting or stopping.

Some of the work done by this machine is the driving of rivets hard down, swelling and fitting the countersink, heading over lightly, thus permitting the parts joined to swivel, and doing internal riveting, such as lamp and hollow ware work, by the use of horns. Although these are the operations for which the tools are primarily designed, they can be used for hammering spun metal pieces before annealing, driving pins, or any other work where a blow is required.

The No. 1 riveter is a small, compact tool for jewelers, clock manufacturers, toys, light metal work and other riveting where 1-32 to ⅛ in. rivets are used. No. 2 is used by tin, brass and sheet metal workers, building hardware manufacturers and makers of automobile lamps and bicycle chains, where the maximum rivet handled is ¼-in. Size No. 3 is used for link chains of all kinds, metal wheel spokes, riveting tanks, and by manufacturers of hardware, agricultural machines and electrical supplies, handling as a maximum ½-in. rivets. The principal dimensions and specifications of these tools are given in the following table:

	No. 1.	No. 2.	No. 3.
Floor space, inches	6 x 10	8 x 18	10 x 20
Depth of throat, inches	5	7	8
Table adjustment, inches	5	8	9
Weight, bench model, pounds	75	325	335
Weight, pedestal model, pounds	125	350	360

In addition to these three types the company builds a portable tool for heading rivets up to ¼-in., which is suspended from the ceiling or a joist by a small steel cable and is fitted with a special type of floor crane, which permits it to be wheeled easily from place to place wherever work is to be done, and a line of special riveters for structural and railroad shop work, where the rivets used range from ⅜ to 1¼ in. The motor driven tools are provided with attachment plugs and wire for attachment to the nearest lighting outlet.

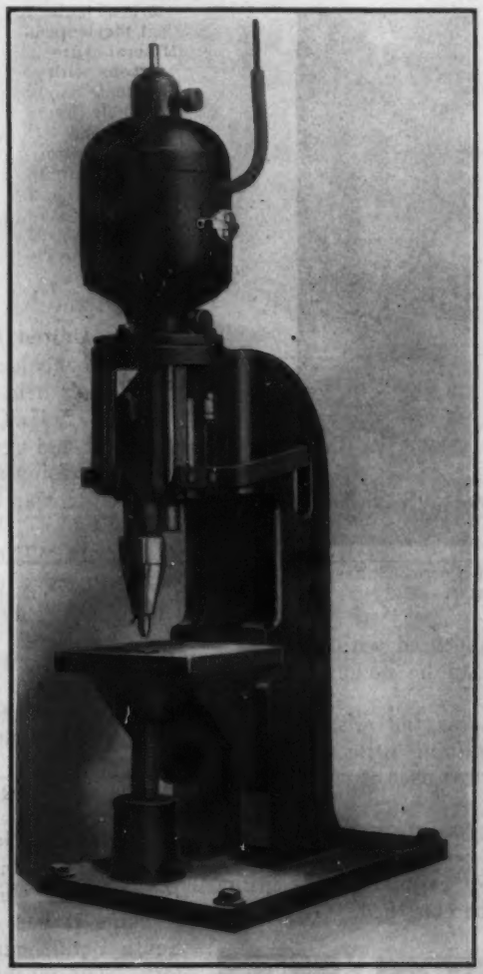


Fig. 1.—Bench Type.

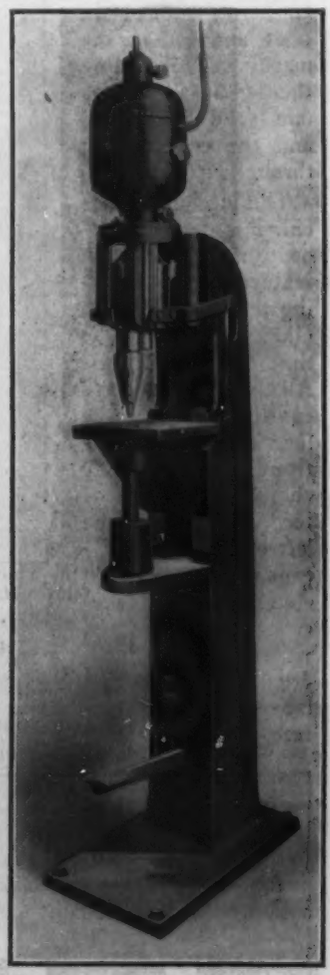


Fig. 2.—Pedestal Type.

Ajax Electric Riveters Sold by the Electrical Machinery Sales Company, Milwaukee, Wis.

A Large Bavarian Iron Ore Deposit

Considerable attention has been attracted during the past five years by reports of iron ore discoveries in northern Bavaria, in the region lying between Nuremburg and Bayreuth. While the deposit has not yet been fully explored, it is known to be of extensive dimensions. About 450 claims have already been filed, covering an area of about 225,000 acres. The ore averages about 40 per cent. iron. Experts have estimated that the deposit contains a total of 1,700,000,000 tons of brown ore, making it a very important addition to Germany's already large ore reserves. It is probable that most of these ores will be shipped to furnaces in other parts of the country, as there is no nearby supply of coal. The district is not far removed from the head of navigation on the Main River, through which and the Rhine the ores can be shipped to the furnaces on the lower Rhine at no great expense.

The Dayton Pipe Coupling Company, Dayton, Ohio, manufacturer of couplings, clamps and fittings, has received an order for about 45 miles of pipe couplings for a gas line to be laid in Kansas.

The Newton 26-In. Cold Saw Cutting-Off Machine

A High Speed Machine with a New Feed-Changing Mechanism

A cold saw cutting-off machine arranged for motor drive and a positive feed of four different rates has been brought out by the Newton Machine Tool Works, Inc., Philadelphia, Pa. The general appearance of the tool is shown in Figs. 1 and 2, which are views of opposite sides of the machine. As will be noticed from these engravings the work table and bed of the machine, including the saddle slides, are one solid casting and the construction throughout is heavy.

This design of machine is said to embody all the known features for increasing the output by the elimination of idle time of machines. All the operations are controlled by three levers, one in the front (Fig. 1) for changing the rate of feed, the other at the left end (Fig. 2) for engaging the feed clutch and fast traverse, while the hand wheel is used only for very slight adjustments and is fitted to the end of the squared feed screw to be removed if operations on broad or angular work interfere. The work clamps and V-blocks are also removable. When operating on I-beams, which are recommended to be cut in a vertical position at all times to make the cuts in the shortest possible time, due to the short length of travel, the V-block is removed. For cutting rounds the block is placed on the table and the work placed in the small V. For cutting square stock a slight vertical projection is provided to facilitate the squaring of the work.

The machines are fitted with No. 2½ Brown & Sharpe geared pumps. The reservoir for the lubricant is in the rear end of the base casting. This lubricating system delivers the heat absorbing and lubricating fluids at the point of cutting, as practice has demonstrated that the former method of rotating the blade through a pan of lubricant was not satisfactory for a number of reasons, chief of which was the inability of the blade to hold a sufficient quantity of fluid and the tank required continual attention in removing chips which could not be prevented from falling into the oil pan.

These machines are fitted with roller thrust bearings in place of disk hardened steel and copper washers, and all bearings are bushed where necessary. All of these features add materially to the cost of the machine, especially the roller thrust bearings, which increase the cost of that particular item about 15 to 16

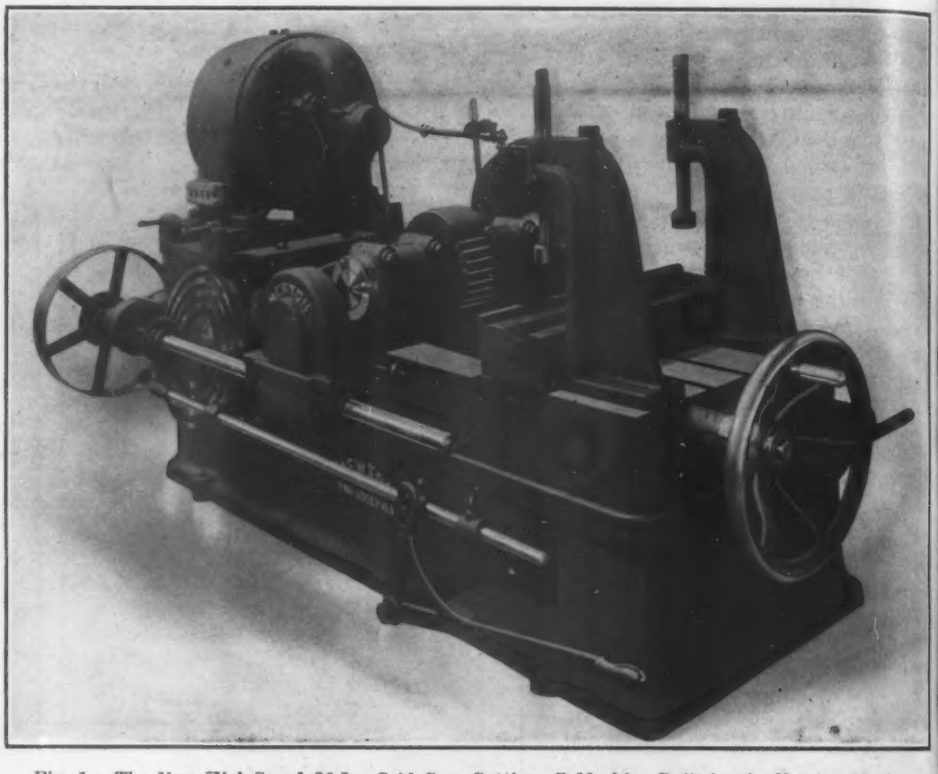


Fig. 1.—The New High-Speed 26-In. Cold Saw Cutting-off Machine Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

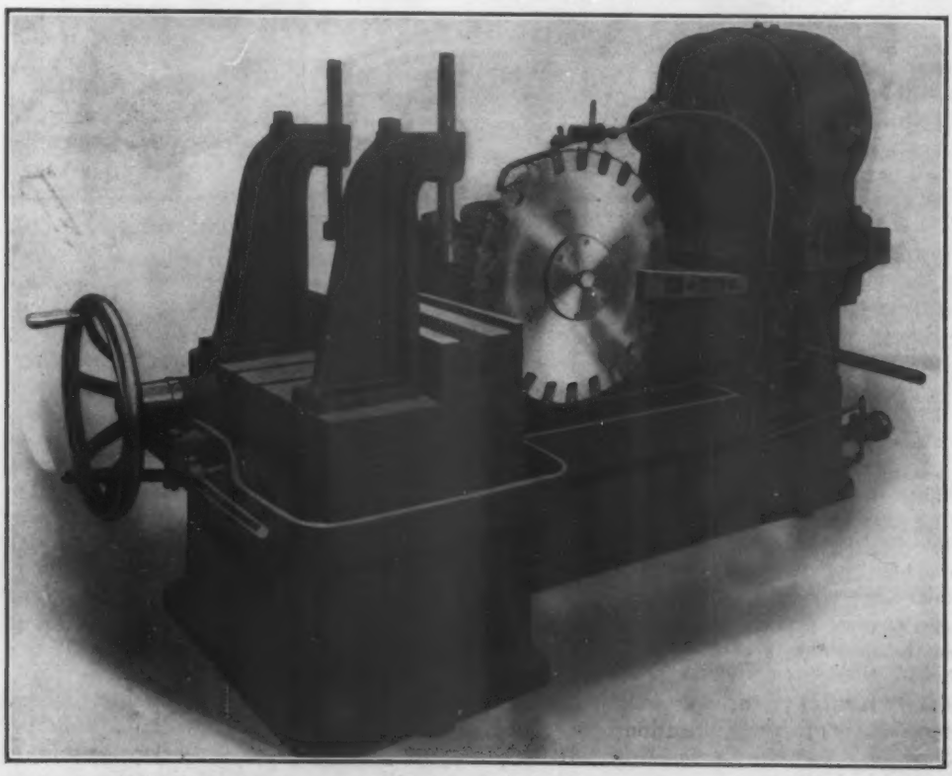


Fig. 2.—Another View of the Newton 26-In. Cold Saw Cutting-off Machine.

times, but it is considered that they are warranted because they very much reduce the operating and maintenance cost.

The spindle of the machine, which is 26 in. in diameter, revolves in brass bushed capped bearings, equal in total length to the diameter of the saw blade, and is driven by coarse pitch tooth, broad face hammered steel gearing mounted between the two spindle bearings. The drive is further through an intermediate spur gear, which is cut from the solid shaft, and is of the same diameter as the worm wheel shaft. The driving worm wheel is of solid bronze and the driving worm is of hardened steel, fitted with roller thrust bearings. Motion to the horizontal shaft on which

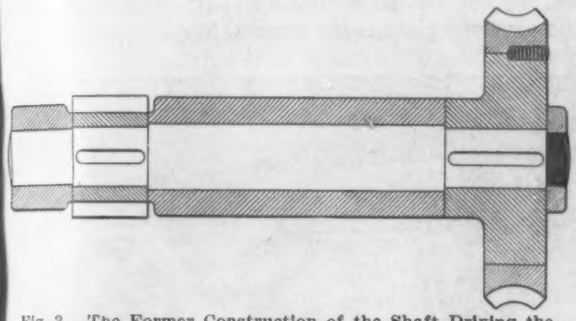


Fig. 3.—The Former Construction of the Shaft Driving the Spindle.

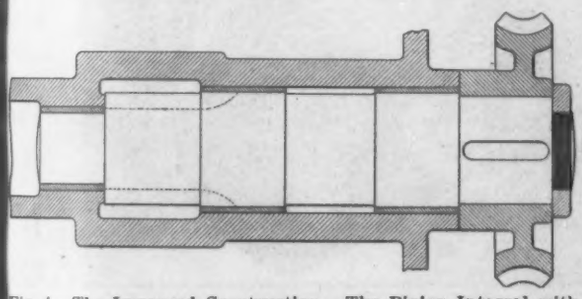


Fig. 4.—The Improved Construction.—The Pinion Integral with the Shaft and the Worm Gear Solid Bronze.

the driving worm is mounted is transmitted by a 4-in. belt to the countershaft or to the armature shaft of the motor when machines are motor driven. The saddle of the machine has square lock gibbed bearing on the bed on the operating side and adjustments are made by taper shoes.

Four changes of positive feed, ranging from 0.547 to 1.109 in. per min. with a 26-in. saw running at a peripheral speed of 45 ft. per min. are provided. This speed is lower than that ordinarily used when machines are fitted with solid tooth saw blades, which is from 60 to 65 ft. The manner of obtaining these feed changes is apparent from an inspection of Fig. 1. Another departure from former practice is the substitution of a solid steel worm wheel for one having a cast iron center, a change made necessary by the increased stresses incident to the use of inserted tooth saw blades to their full capacity. The difference between the former plan of furnishing the worm wheel shaft with the intermediate spur gear keyed on and the present scheme of cutting the teeth from the solid shaft is shown in Figs. 3 and 4.

Power quick return to the spindle saddle is also provided, which is available in both directions on a motor-driven machine if a double-throw switch and reversing motor are employed.

The capacity of the machine is round stock 7½ in. in diameter, square pieces 7 in. on a side, and for I-beams on a square or miter cut in a vertical position 15 in. The net weight of the machine is 5800 lb. and the floor space is 8 x 3 ft.

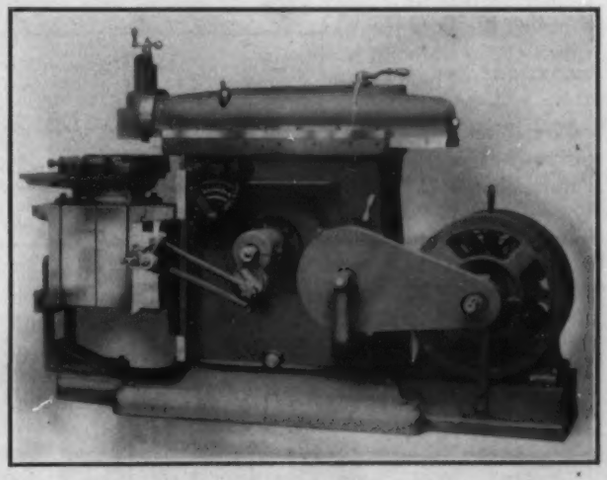
The equipment regularly furnished includes the pump, piping and attachments for cutter lubrication and the necessary wrenches for either the belt-driven or motor-driven models, and with the former a countershaft is included.

A Motor-Driven Queen City Shaper

The adjustable speed motor offers decided advantages in the way of rapid and economical production for some classes of machine tools. With the mechanical methods of speed reduction, by cone pulleys or nests of gears, only coarse increments in speed are obtainable which means that tools cannot always be worked up to the limit of their productive capacity. The new high-speed steels require a greater pulling power in the belts and an increased strength in the gears and reasonably fine increments in speed by mechanical means alone are almost impossible, owing either to the increased length of the cone pulley or to the large number of gears, some of which are of abnormal size. For these reasons the adjustable speed motor may in some cases actually decrease the cost of the machine tool by eliminating bulky and expensive mechanical speed-changing devices.

In the accompanying engraving, a type SA 5½-hp. motor, made by the Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., is shown connected to a 24-in. back-geared crank shaper built by the Queen City Machine Tool Company, Cincinnati, Ohio, which was illustrated and described in *The Iron Age*, April 7, 1910. The motor is provided with auxiliary commutating poles and has a speed range of from 450 to 1350 rev. per min.

The faceplate controller, located on the side of the shaper, enables the workman to regulate the speed to suit the requirements of his work and a large number of operating speeds, limited only by the number of field resistance steps on the controller, are available. Thus the correct speed for most efficient operation on each piece of work is easily and quickly obtained. On each position of the controller, the speed of the motor is



A 24-In. Queen City Shaper Driven by a 5½-Hp. Westinghouse Adjustable Speed Motor.

practically constant for all rated loads, which is of great importance in machine tool service, as it reduces tool breakage to a minimum. The controller handle is within easy reach of the operator, who can make any speed adjustment or stop the shaper instantly while standing at the rail.

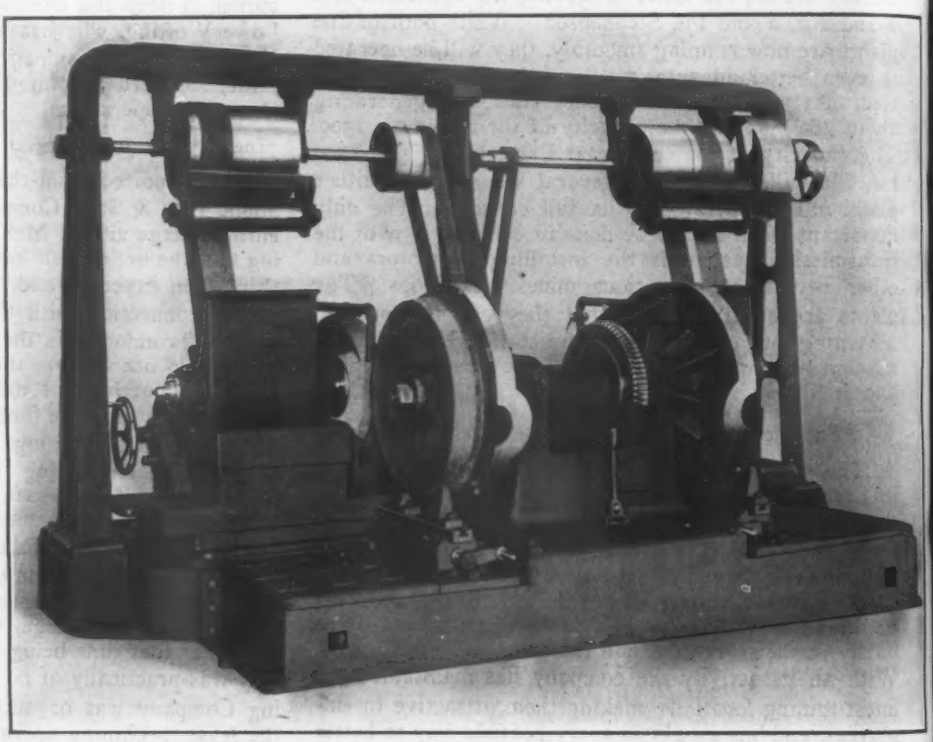
The use of a silent chain to connect the motor to the shaper eliminates belt slippage and provides a positive driving power. The chain runs very smoothly and without perceptible vibration. The motor is supported on a sub-base cast integral with the base of the shaper. The equipment is compact and takes up little floor space.

The Fort Pitt Spring & Mfg. Company has moved its general offices from the Farmers' Bank Building, Pittsburgh, to its plant at McKees Rocks, Pittsburgh, bringing its executive and manufacturing departments together to better handle its growing business.

A New Norton Car Wheel Grinder

The car wheel grinder shown in the illustration is the latest type brought out by its builder, the Norton Grinding Company, Worcester, Mass. While it follows in general design the machine described in detail in *The Iron Age* September 27, 1906, it is arranged to grind wheels unmounted on axles, being intended for the use of manufacturers of car wheels rather than the railroads. The intention is first to grind the wheel true and round and to chuck the hole afterward. In fact, buyers of car wheels use different sized holes, according to where the wheels are to be used, and it is therefore necessary for them to chuck the holes to suit themselves, true with the grinding. The wheel shown in place is of manganese steel, with hard rim and soft center.

The machine is fitted with extraordinarily heavy face plates, to which the loose wheels are bolted through the cored hole in the center, resting against three points. Location in the center of the axis is effected by means of the V support which has previously been adjusted for the purpose. The small crank shown at the front of the V mechanism is turned over, dropping the V's sufficiently so that no high spots of the wheel will touch them while it is revolving. In each plate are three half-round openings, the purpose of which is to admit the hook used for lifting the wheel into place and holding it during the bolting. The operator, of course, stops the revolution when one of the openings is at the top. The two face plates and the spindle form one solid casting, to which the worm wheel is bolted, which secures the great rigidity that prevents the vibration of the work while grinding. The machine weighs 16 tons.



A New Grinder for Car Wheels Unmounted on Axles, Built by the Norton Grinding Company, Worcester, Mass.

Sharon Steel Hoop Company Extensions.—The erection of a wide band mill which has been discussed for some time by the management of the Sharon Steel Hoop Company, Sharon, Pa., has now been determined upon, and work upon it will be started as promptly as possible. The mill will be ready for operation about January 1 next. It will require an addition of about 1000 hp. to the present power plant. None of the contracts has yet been let. On the completion of the new mill the Sharon Steel Hoop Company will be in position to produce hoops, cotton ties and bands from ⅜ to 12 in. wide and employment will be given to 100 or more additional men. It is the policy of the company to carry all its steel production forward to finished material ready for the market.

The Union Drawn Steel Company, Beaver Falls, Pa., part of whose plant was recently destroyed by fire, has placed a contract with the Masters-Mullin Construction Company, Cleveland, Ohio, for the first story of its new factory building up to the first floor level, to be built of reinforced concrete. The steel work for this building, amounting to about 1000 tons, has been placed with the Berger Iron Company, Akron, Ohio. The building will be 140 x 375 ft., two stories with basement, fireproof throughout. Considerable new equipment will be needed which has not yet been placed.

The Continental Can Company is now operating its new plant at Canonsburg, Pa., which is devoted exclusively to the manufacture of open cut cans, not soldered inside. The present production is 200,000 cans per day, but as soon as all machinery is installed the daily capacity will be 500,000. The company has found its stock facilities inadequate and is now building an addition to its stockroom, a brick building, 100 x 150 ft., which will be completed about August 15. The Canonsburg plant is the largest, being operated by the Continental Can Company, and is one of the most modern in the country. A number of new ideas have been worked out in the manufacturing departments.

The Loop Nut Company, Madison, Wis., has been incorporated to manufacture a patented nut invented by W. C. Schoelkopf, the general manager of the company. The company at present will confine its operations to the manufacture of brass nuts from ⅛ to ¼ in. for electric connections, storage batteries, coils, carburetors, &c. It contemplates later extending its operations to include nuts of larger sizes in iron. The company has purchased most of its equipment, but is now in the market for automatic drilling and tapping machines to tap nuts of the above mentioned sizes. It desires catalogues from manufacturers of tools of this description.

The A. E. Shorthill Company, Marshalltown, Iowa, manufacturer of structural iron and steel, has submitted to the Commercial Club of Omaha, Neb., a proposition for the removal of its plant to that city, where it will be reorganized under the name of the Omaha-Shorthill Company and capitalized at $500,000. Part of the present plant of the company at Marshalltown will remain in operation, however, to take care of the Iowa trade in bridge and structural steel business. Work of removal will begin as soon as a site has been determined upon.

Lake Superior Mining Developments

The Cleveland-Cliffs Company's Operations—Mine Valuations in Ishpeming—The Republic Iron & Steel Company May Buy a Mesaba Village Site—Abandoned Mines Reopened

MARQUETTE, MICH., July 9, 1910.—The electrification of the Marquette range mines of the Cleveland-Cliffs Iron Company is proceeding with satisfactory headway. There are two generating plants, one at Negaunee and one at Princeton. The former station is now furnishing power to the Maas, Negaunee, Cleveland Lake, Cleveland Hard Ore, North Lake and Barnes mines; the latter is serving the Princeton No. 1 and No. 2 and the Stephenson. While both of the plants are now running smoothly, they will be operated to even better advantage when a heavier load is carried. At present the Negaunee station is generating about 300 kw., and the capacity of the turbine is 1500. The capacity of the turbine at Princeton is also 1500 kw. It will, perhaps, be several years before either plant will be operated to its full capacity. The only important work still to be done in connection with the transmission system is the installing of motors and other equipment at various mines and shops. The plants are constructed so that they can be operated separately or jointly. With the stations in full commission an important saving will be effected in labor and fuel costs.

The Cleveland-Cliffs Company's Progressiveness

The company's North Lake mine will be a shipper this season, the shafts now being rapidly opened to the ore through the connecting drifts and cross cuts. The property is only one of half a dozen or more that the company is engaged in developing, and there are other deposits still to be opened. In the case of this corporation hundreds of thousands of dollars are expended annually in the search for and the development of mines. With all its activity the company has maintained the finest mining locations, making them attractive to employees, and has sought in every possible way to better the condition of its men, being farsighted enough to realize that such things tend to raise the standard of labor. It has been a mutual work, appreciated by the many concerned.

The Cleveland-Cliffs Company has been progressive in other lines than mining. For one thing, it is providing homes for many tillers of the soil, vast tracts of hardwood lands becoming available for that purpose with the timber removed. It has also engaged in forestry to a considerable extent, returning to many lands young trees to replace the timber it is taking. It has been prominent in all matters pertaining to the advancement of the country in which it operates so extensively, and it is an organization recognized as well deserving any good fortune it may meet in its development of the mineral resources of the region.

Mine Valuations in Ishpeming

The valuation of the realty of the mining companies operating within the city limits of Ishpeming, Marquette range, has been fixed by the Board of Review at $3,411,000. This is a reduction of $50,000 from the figures of the preceding year. The assessed valuation of the United States Steel Corporation's hard ore and hematite properties has been fixed at $835,000. This is less by $100,000 than the valuation made in 1909, but as the Section 16 mine has been placed on the roll at $600,000, while last year it was down for $500,000, the corporation's total of $1,435,000 remains the same. No changes were made in the valuation of any of the Cleveland-Cliffs Iron Company's properties, compared with last year, and the total assessed valuation in this case is $1,526,000. The valuation of the Jones & Laughlin Steel Company's Lake Angeline mine has been reduced from $500,000 to $450,000. The personal valuation of the several mining companies has been cut by something like $200,000, this action being taken on account of the smaller stocks of ore now on hand.

The Bates Iron Company has been organized for the purpose of developing and operating a mine in the so-called Hall-Yackel lands at the western end of the Menominee range. The property is located in section 19, 43-34, Iron County, Michigan, and is controlled by Ladenberg, Thalman & Co. of New York, operators of the Florence mine in the Wisconsin portion of the Menominee district. Much exploratory work has been done at the new property the past two years. This work has recently been suspended and a shaft will be sunk. This will be a difficult problem, as the overburden is deep and contains a great deal of quicksand. Lowe Whiting, who has been mining engineer for the Youngs Mining Company at Iron River for several years, has been appointed superintendent of the Bates Company's operations.

The Republic Iron & Steel Company's Mesaba Operations

It is reported from the Mesaba range that the Republic Iron & Steel Company contemplates buying the entire village site of McKinley. It is the understanding that the ore deposit has been found of much greater value than expected, and, besides, litigation has broken out in connection with the mining operations, which are being conducted in the very heart of the town. The officials do not confirm the rumors regarding the contemplated purchase of the village. The company has been drifting for some time under buildings in the town, and the people owning the houses having become alarmed, are demanding the right to inspect the mine to determine if it is safe for them to live above the workings. The management has denied them this right, and court action has followed in the form of an injunction. The hearing on the injunction is still pending.

The Liley mine, formerly known as the Alberta, at Virginia, Mesaba range, was abandoned in 1908, the lessees at that time being of the opinion that the property was practically of no value. The Liley Iron Mining Company was organized last year and took over the lease, beginning operations May 1 last. Since the resumption of work 10,000 tons of ore has been shipped and some 30,000 tons more will go out this season. It is claimed that the deposit is large enough to permit of production for a number of years. This season's output has been sold to M. A. Hanna & Co. The property is an underground proposition. The present company holds a 10-year lease.

Activity on the Vermilion Range

The value of the tract having been determined after months of exploratory work, the Section Thirty Mining Company is proceeding with the development of its property on the Vermilion range on an ambitious scale. The deposit apparently is extensive, footing up some millions of tons, and the ore is of the finest quality. Mining thus far is almost entirely incidental to development work, but fully 50,000 tons will be shipped the present season. Very naturally the developments at Section Thirty have greatly stimulated exploratory operations on the Vermilion. Various properties are being drilled or test pitted, and in some cases shafts are being sunk. It is the claim that new ore bodies are being found. The conditions at the North American, Vermilion Steel & Iron and Vermilion Steel Extension, all of which are controlled by T. J. Walsh and associates, are reported entirely satisfactory. The Vermilion Iron Development Company is sinking a shaft on Pine Island. The formation here has been traced for a distance of a mile. It is some 200 ft. in width and on the surface contains a fair grade of ore mixed with jasper. It is hoped to encounter clean ore at depth. The shaft will be sunk

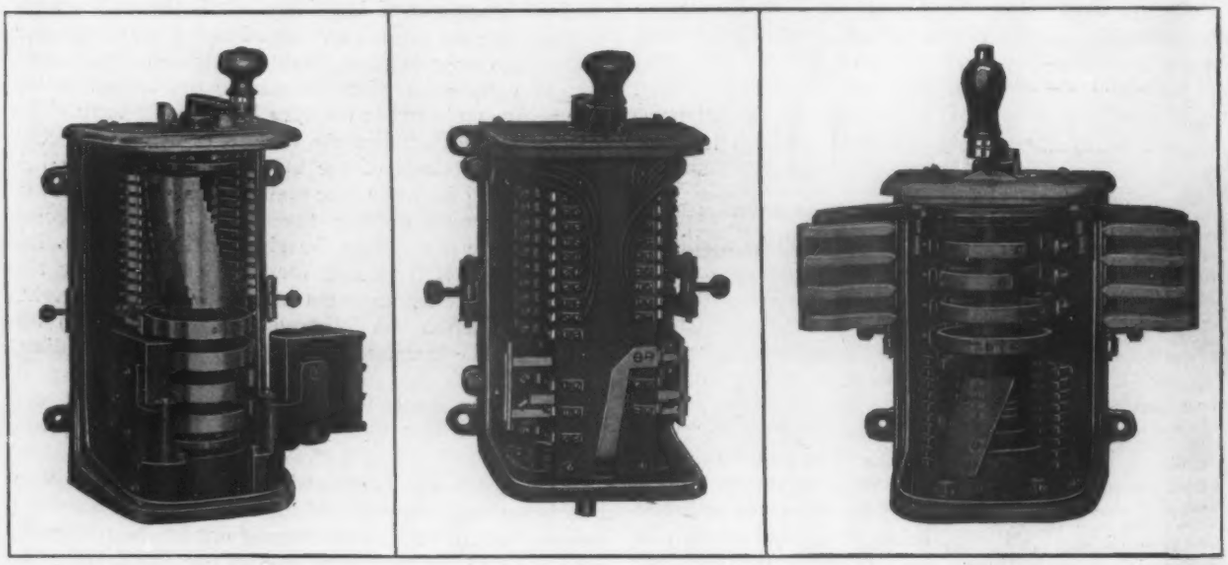
500 ft. The Roy Development Company has mixed ore at a depth of 120 ft., and it, too, is hopeful of better things. The Duluth-Vermilion Company, which is exploring in the Robinson Lake basin, has started the work of sinking a shaft. So, also, has the Section Thirty Development Company. The property of this latter concern adjoins that of the Section Thirty Mining Company and is believed to carry the extension of the Section Thirty deposit. Ore has, in fact, been encountered.

G. E. Drum Type Controllers for Machine Tools

For the control of machine tools driven by electric motors where the starting service is frequent or of a severe nature, drum type controllers generally are to be preferred to other types. The General Electric Company, Schenectady, N. Y., builds machine tool controllers designed with many special features to meet the conditions of modern shop practice. Among these features may be mentioned substantial removable barriers between the fingers wherever required; magnetic blowouts for all equipments for 500-volt service or for large currents at lower voltages; special screws to hold the segments, with heads slightly countersunk below the surface so as to prevent their wearing with the segments, and tapered at such an angle as to prevent their loosening; sheet iron covers lined with asbestos to protect live parts from dust and mechanical injury, and eliminate danger of shock from accidental contact; terminals and other parts readily accessible, and field control with adjustable fingers similar in design to the fingers for the armature circuit. The accompanying illustrations show three types of G. E. drum controllers.

When it is desired to obtain overload and no-voltage protection in connection with drum controllers, a CR-251 panel should be used. This panel consists of a double pole circuit breaker, a single pole contactor and two fuses, all mounted on a slate base, the latter being provided with feet to make a neat installation. The circuit breaker and fuses afford the overload, and the contactor the no-voltage protection. The operation of these panels depends essentially upon an electrical interlock between the no-voltage release and the drum controller. When the controller handle is moved to the first point the coil of the contactor is energized, closing the contactor and completing the armature circuit. As greater force is required to close the contactor than to hold it closed, when the controller handle is moved beyond the first point, a high resistance is inserted in series with the contactor coil to prevent the contactor from closing in case of a restoration of voltage after failure, until the controller is turned back to the first point.

This device is designed for both shunt and compound wound motors.



Type R-99-A. Type R-116-A. Type R-118-A.

Drum Type Controllers for Machine Tool Motors, Made by the General Electric Company.

The Worcester Half Time School

The terms of the co-operative apprenticeship which is a feature of the new half time school at Worcester, Mass., contain interesting information as to the nature of the course. They are, in part, as follows:

The term of apprenticeship shall be four shop years, to be divided into eight periods of six shop months. Lost time shall be made up at the expiration of each period, at the rate of wages paid during said period, and no period of service shall begin until all lost time of the preceding period shall have been made up.

Applicant or guardian shall deposit with the company, as surety for the performance of his duties under this agreement, the sum of $50.

Applicant shall be given a preliminary trial of 350 hours. At any time during this trial period the company reserves the right to return the guaranty fund and to terminate this agreement, if the applicant does not show promise of ability to learn the machinist's trade.

If for any cause orders shall fall off, making it necessary to shorten the hours of labor, or to close the works or any department thereof, the company may for such time suspend this agreement wholly or in part, paying only for the time actually worked. Time so lost shall be made up as hereinafter provided.

The apprentice shall attend the high school in ————, and successfully complete the four-year course provided for alternate-week scholars. He shall work one week in the shop and attend school the alternate week, and during the school vacation shall work one week and have the alternate week to himself.

The apprentice shall conform to all the rules of the shop, shall perform his duties with punctuality, diligence and fidelity, rendering any reasonable service in the line of the trade which may be required.

The apprentice shall not belong to any military company or fire company during the term of apprenticeship except as required by law.

The company will faithfully instruct the apprentice in the machinist's trade in their shop, on the alternate school and shop plan, advancing him successively through the various departments as his capabilities are developed. If the apprentice shows special aptitude in any particular branch of the trade and desires to make that branch a specialty, the company will give the apprentice the opportunity whenever it can be accomplished consistently with the interests of both parties.

The company reserves the right in its discretion to terminate this agreement or to discharge the apprentice from its employment for any of the following reasons:

a—Refusal to obey rules and regulations.

b—Lack of industry or capacity.

c—Indifference to his duties or laziness.

d—Improper conduct within or without the shop.
e—Failure in the school course.
f—Leaving school or expulsion from school.

The company will hold the guaranty fund of $50 until the expiration of this agreement. If the apprentice completes the full term of four shop years, learns his trade and demeans and acquits himself throughout in a creditable manner, the company will repay to the apprentice the full sum deposited, together with 4 per cent. interest thereon, and will also give him a diploma certifying him to have served his time as an apprentice and to be competent in the branches he has followed.

If the apprentice leave the service of the company before the completion of his apprenticeship, or is discharged by the company for any of the reasons specified, the guaranty fund, together with all accrued interest, shall be forfeited to the company, and the company shall not be liable to the apprentice or any other person for the whole or any part thereof.

The apprentice shall be paid wages on the regular pay days of the company, according to the following scale, for the time of actual service in the shop:

Period.	Cents per hour.	Period.	Cents per hour.
First	10	Fifth	12
Second	10½	Sixth	13
Third	11	Seventh	14
Fourth	11½	Eighth	15

Lackawanna Steel Company Earnings

For the Lackawanna Steel Company and subsidiary companies the following statement of earnings is made for the quarter and the half year ending June 30, 1910, and a comparison is given with the corresponding periods of 1909:

April 1 to June 30.

	1910.	1909.	Changes. Increase.
Income, less expenses, repairs, &c.†	$1,662,002	$586,863	$1,075,138
From investments	349,000	80,460	268,539
Totals	2,011,002	667,323	1,343,678
Deduct interest	437,500	406,875	30,625
Sinking funds	101,402	90,816	10,585
Depreciation and renewals	364.063	282,537	81,526
Total deduction	902,965	780,229	122,736
Surplus	1,108,036	*112,905	1,220,941

January 1 to June 30.

Income, less expenses, repairs, &c.†	$2,770,343	$765,533	$2,004,809
From investments	678,000	160,920	517,079
Totals	3,448,343	926,454	2,521,889
Deduct interest	854,583	792,500	62,083
Sinking funds	191,614	141,223	50,391
Depreciation and renewals	708,165	483,359	224,806
Total deduction	1,754,363	1,417,082	337,280
Surplus	1,693,979	*490,628	2,184,608

* Deficit. † After deducting all expenses incident thereto, including ordinary repairs and maintenance of plants and interest on bonds and fixed charges of subsidiary companies.

Unfilled orders on June 30, 1910, are reported at 379,836 gross tons, against 384,984 tons one year previous.

The Eureka Steel Novelty Company, Buffalo, N. Y., has absorbed the G. H. Davis Mfg. Company and the Silver Wire Company of Buffalo and the Twin City Mfg. Company of Tonawanda, N. Y., having increased its capitalization for this purpose, and will remove its manufacturing plant to North Tonawanda. The reorganized company is enlarging and re-equipping the plant occupied by the Twin City Mfg. Company on Schenck street, North Tonawanda, and will take possession shortly. Most of the new machinery and equipment required has been provided for, but some additional stamping presses and other equipment will be purchased later. The company's specialty is garment hangers, of which it makes over 50 different styles in wire, metal and wood. Various novelties of wire and steel will also be made and contract work will be done. William M. Farnham is president.

Isabella Furnace No. 2 of the Carnegie Steel Company, which was recently blown out, will be torn down and replaced by a modern stack.

A Large Casting Made by the Prime Steel Company

The steel casting shown in the accompanying illustration was cast in the Dutcher plant of the Prime Steel Company, Milwaukee, Wis. It is unique because of its size, being 12 ft. 6 in. in diameter, 9 ft. 6 in. deep, 1½ in. thick below the flange, and weighs 8 tons. No pattern was used, as it was made in a sweep mold. It has been the practice heretofore to make castings of these dimensions in sections and it is considered something of an accomplishment to have successfully made a casting of this character under these conditions. The casting is a hopper for one of the blast furnaces of the Northwestern Iron Company at Mayville, Wis.

The Dutcher plant was acquired by the Prime Steel Company last fall, since which time approximately $100,000 has been spent in improvements and additions. The foundry now has a capacity of 120 tons daily. There are two open hearth furnaces, each of 15 tons capacity. The main casting floor has been increased by an addition 80 x 130 ft., making the length of this building 400 ft. A further extension is contemplated in the near future. This building is served by two electric traveling cranes, one of 20 tons capacity, and one of 25 tons capacity, each equipped with a 10-ton auxiliary hoist. A Brown hoist yard crane with magnet attachment handles the material in and out of the yard. A pattern shop and pattern storage building have been added, together with a large and complete core room. It is also proposed to extend the chipping room in the near future.

A Blast Furnace Hopper Ring Cast in One Piece by the Prime Steel Company, Milwaukee, Wis.

The Michigan Stove Company, Detroit, Mich., states that the report recently published that its capital stock had been increased to $3,000,000 is not correct. The capital stock of the company has been $3,000,000 for nearly 10 years, being divided into $1,500,000 preferred and $1,500,000 common. Some weeks ago an increase was made in the preferred stock to $1,600,000. The increased amount was issued from the company's surplus, and is in the hands of the treasurer, and the main object in issuing it was to give some of the company's reliable men in the office and responsible departments an interest in the business. Some of the stock will be issued to them. The present capital stock of the company is, therefore, $3,100,000, of which $1,600,000 is preferred and $1,500,000 common.

Trade Publications

Oil Burning Equipment.—Tate, Jones & Co., Inc., Empire Building, Pittsburgh, Pa. Circular No. 1029. Calls attention to the latest development which has taken place in the manufacture of oil burning equipments for open hearth furnaces. The line manufactured and illustrated includes a water-cooled and a swinging burner for open hearth furnaces and a ladle drying and heating burner. The swinging type is the one ordinarily employed, but where the space between the furnaces is so limited as to prevent its use the water-cooled one is used instead.

Automobiles.—The Stevens-Duryea Company, Chicopee Falls, Mass. Catalogue. Illustrates the complete line of motor cars for 1910 built by this company. The special features of these cars—the unit power plant, three-point suspension and the patent multiple disk clutch—are all described at some length. Practically all the parts entering into the construction of these cars are illustrated and there are a number of illustrations of the different models. Space is also given to a brief illustrated description of the testing department where the engines are tested. This was described in *The Iron Age* September 23, 1909.

Reinforced Concrete Construction.—Turner Construction Company, 11 Broadway, New York. Pamphlet. Contains a classified list of the contracts for reinforced concrete structures which have been recently completed by this company. They include general manufacturing buildings, warehouses, mills, offices, lofts, stores, cold storage plants, stables and garages, power houses, stairs, reservoirs and tanks, foundations and retaining walls, and a number of miscellaneous structures. Among the last are included bank vaults, chemical laboratories, a coal hoist tower, machine shop, a pipe tunnel, a school, a tenement house, and a small bridge between two existing buildings.

Hose.—New York Belting & Packing Company, Ltd., 91 Chambers street, New York. Catalogue M H. Devoted to Magic hose. This hose was originally designed for garden use but it is now made in a number of different sizes for water, air drill and pneumatic tool use. The tube of this hose is seamless rubber reinforced with one or more layers of tightly braided yarn with a layer of rubber between each braiding and covered by a seamless cover reinforced in some cases with wire or a woven metallic jacket.

Throttle Valves.—The Watson-Stillman Company, 190 Fulton street, New York. Catalogue No. 80. Refers to the Chambers locomotive throttle valve, which was designed by a superintendent of motive power to overcome the objections encountered in the older designs. These valves are made in two standard types, which differ only in the connection to the dry pipe, one being intended for use where the throttle stem enters above the center line of the dry pipe and the other where it enters below. The special features of these valves are described and this description is supplemented by illustrations of the various parts. Some of the advantages claimed for this valve are that inspections can be made without removing parts or breaking steam joints, no lost motion in the operating mechanism, ease of operation, a greatly reduced number of parts and a greater number of parts standardized for all types and sizes of locomotives.

Steel Castings.—The Penn Steel Casting & Machine Company, Chester, Pa. Catalogue. Size 7 x 10 in.; pages 84. Contains a number of illustrations descriptive of the general line of work done, which includes gun mounts and gun carriage parts, propeller wheels, rudders, stern posts, frames and miscellaneous castings entering into marine construction, stockless and old style anchors, high pressure pipe and fittings, valves and cylinders, gearing, rolls and general machinery castings, locomotive and general railroad castings, and electrical and miscellaneous castings. A brief description of the different castings appears under each illustration and in addition there are a number of views showing the plant where this work is done.

Counting Instruments.—The Shaeffer & Budenberg Mfg. Company, 963 Kent avenue, Brooklyn, N. Y. Bulletin. Covers the counters, engine registers and speed indicators made by this company. The instruments illustrated include counters in square and round cases for registering the motion of engines or other moving parts where the counter is directly attached, electric counters intended to be mounted at a distance from the machinery, counters for cars, hoists and ropeways, can and loom counters, and a device for measuring the output of paper machines. Space is also given to speed indicators and pocket revolution counters.

Bar Iron and Sheets.—The Zug Iron & Steel Company, Pittsburgh, Pa. Catalogue. Size 4 x 6½ in.; pages 54. Contains trade names and definitions of the various brands of high grade iron manufactured by this company under the trade name of Sable, notes on iron and steel and black sheets, and tests. A classification of the extras on iron and steel and tables of the weights and areas of different sizes of bar iron are included.

Metallic Filament Lamps and Meter Testing Rheostats.—The General Electric Company, Schenectady, N. Y. Two bulletins. No. 4739 describes the G. E. Mazda incandescent lamp, which has an improved tungsten filament and gives a high efficiency. The bulletin describes the lamp in detail and illustrates the various sizes of this type of lamp for use on multiple circuits. Tables showing the cost of operation and life, effect of voltage variation on candle power and the relative costs of lighting with various lamps to secure equal illumination are included. Space is also given to the reflectors necessary to give the best results. No. 4744 is concerned with a meter testing rheostat designed to supply an artificial load for making the periodical calibration of service wattmeters. Switches are provided whereby the load can be varied from ⅛ ampere to the full load rating of the rheostat in ⅛-ampere steps. Two sizes of rheostat are made, the capacities being 15 and 30 amperes respectively.

Smoke Preventer.—O. H. Scharf Company, Ypsilanti, Mich. Catalogue. Illustrations and descriptive matter explain the operation of the Scharf automatic smoke preventer and fuel economizer, which is said to be automatic in action, easy to operate, economical in the use of fuel, and reliable. This device is operated by the opening of the fire door for firing and gives a strong draft for the new fire. The smoke preventer is shown alone and in combination with a boiler, and there are a number of views of plants where it has been installed.

Die Grinder.—The Geometric Tool Company, New Haven, Conn. Pamphlet. Deals with the Geometric chaser or die grinder, said to be adapted for grinding any make of thread chaser or tap-formed die. The vise in which the work to be ground is held is mounted universally, and the adjustments provided are such that the die or chaser may be ground square or to any radius according to its shape and whether it is right or left hand. A second grinding wheel is provided for tool grinding.

Pulverizing and Crushing Machinery.—The Jeffrey Mfg. Company, Columbus, Ohio. Catalogue No. 31C. Shows the Jeffrey pulverizers, alfalfa mills, shredders and roll crushers. Specifications and descriptions of these machines are included, and these are illustrated by photographic views and drawings. The latest models of the Jeffrey swing hammer pulverizer for crushing limestone, gypsum, shale, slate, phosphate rock, fireclay, kaolin and run of mine coal are also illustrated and described. In a number of cases the various parts entering into the construction of the machines are shown as well as the complete machines themselves. A partial list of users of these machines is given, together with the number used and the character of the material they handle.

Second-Hand Electrical and Steam Machinery.—John A. Stewart Electric Company, First National Bank Building, Cincinnati, Ohio. Special list of new and second-hand electrical and steam machinery, which is offered for immediate delivery. The lines listed include alternating and direct-current generators, in direct-connected, belted or coupled models, rotary converters, alternating and direct-current motors, steam turbines, Corliss and automatic engines, boilers, condensers, transformers and circuit breakers.

Analytical Instruments for Gases.—The Carb-Ox Company, Rogers Park, Chicago, Ill. Pamphlet. Describes and illustrates a line of gas analysis instruments and gas sampling apparatus designed for use in connection with the analysis instruments. An automatic recorder for recording and indicating the draft, the presence of carbon dioxide and automatically analyzing flue gases and recording the percentage of dioxide present is also described. Other specialties to which space is given include an automatic gas calorimeter designed for indicating or recording or both, an automatic damper regulator, a differential draft gauge, and an apparatus for testing lubricating oils.

Forges, Blowers and Drills.—The Canedy-Otto Mfg. Company, Chicago Heights, Ill. Price-list No. 9. Illustrates a line of steel forges for all classes of work handled by blacksmiths, wagon, plow, railroad, boiler, tin and small repair shops, and forge blowers designed to be mounted either on a column or bench and operated by either a crank or lever. The line of drills includes a large number of different sizes and styles, from single-geared hand-feed drill handling ½-in. bits to a large 20-in. power operated upright drill. The illustrations are supplemented by brief descriptions and a list of repair parts is included.

Blowers.—The Piqua Blower Company, Piqua, Ohio. Catalogue. Deals with a line of positive blowers built with two impellers which are exact duplicates and perform the same amount of work. Two styles of blower are built, one which is designed for blast pressures of 32 oz. per square inch and continuous duty and the other for service requiring a blast pressure of 16 oz. or less and intermittent duty. These two types are illustrated and described and tables giving the principal dimensions are appended. A number of other blowers which are modifications of these two general designs are also shown.

Contractors' Supplies.—Al. H. Hoffman, 327 Hutton Building, Spokane, Wash. Monthly bulletin and circulars. These relate to contractors', railroad, mine and building supplies and equipment, such as steam shovels, locomotives, buckets, concrete mixers and a preparation for removing carbon from the cylinders, valves and pistons of gas engines without any injurious effect.

Molding Machines.—Henry E. Pridmore, Nineteenth and Rockwell streets, Chicago, Ill. Catalogue No. 7. Size 7¼ x 7¾

in.; pages 54. Calls attention to the adaptability of the Pridmore molding machines for the production of automobile castings. The molds used in the production of the different castings are illustrated as well as the machines making them. A partial list of manufacturers of automobiles operating their own foundries and jobbing founders making a specialty of this class of work who use these machines is appended.

Air Compressors. — Ingersoll-Rand Company, 11 Broadway, New York City. Forms Nos. 3006 and 3023. The former gives general description and specifications for the class O duplex steam-driven air compressor, whose distinctive features are massiveness, powerful construction and simplicity of design. The other pamphlet is devoted to a special type of the class O compressor which is known as the OC class and is driven by a Corliss engine. The illustrations include the compressors themselves and the different parts entering into their construction.

Vacuum Cleaners.—The Connersville Blower Company, Connersville, Ind. Bulletin A-V. Describes a new automatic valveless residential unit for vacuum cleaning in which a novel arrangement has been devised for disposing of the dust after it has been collected. This is so arranged that all the air drawn into the pipes is filtered through water, thus separating the dust from the entrained air and leaving it in solution until it is flushed into the sewer. This filtering water is automatically replaced every time the mechanism is started and is flushed out each time it is stopped. This device can be installed anywhere in the building, the preferred one being the basement of a residence or small building, while in larger buildings it is possible to intall units having a capacity of one or two sweepers on different floors. The connection to the sewer for disposing of the dust is the same as that used for any ordinary plumbing fixture.

Foundry Heating Systems.—The Green Fuel Economizer Company, Matteawan, N. Y. Pamphlet. Contains detailed descriptions of two installations recently made by this company at the foundry of the Waterbury Castings Company, Waterbury, Conn., and the plant of the Abendroth & Root Mfg. Company, Newburgh, N. Y. In the former the space to be heated was approximately 515,000 cu. ft., and the side walls were almost entirely glass. The arrangement of the ducts which supplied the heat just where it was needed by the workman while at the same time furnishing them with fresh air and forcing the smoke and gases out of the building through the skylight, is also described. *The Iron Age*, January 27, 1910, and October 22, 1908, contained illustrated descriptions of these two installations.

Sand Rammers.—Ingersoll-Rand Company, 11 Broadway, New York. Bulletin No. 8108. Concerned with the Crown bench and floor sand rammers for foundry and concrete work, which are operated by compressed air. Special advantages claimed are economy, low cost of production, large output and high quality of the work. The construction of the rammer is described and illustrated by sectional views. A table showing the saving produced by the sand rammer over hand ramming for a number of different sizes of copes is appended.

Vacuum Cleaners and Air Compressors.—The Blaisdell Machinery Company, Bradford, Pa. Six bulletins. Refers to the rotary one and two sweeper outfits, which are designed for location in the basement or the cellar of a house and are connected with the upper floors by a standpipe or riser, outlets being provided on each floor for the connection of the hose and cleaning tools, a high vacuum portable cleaner of one-sweeper capacity and a portable vacuum cleaning plant mounted on a wagon. Practically all the different types of a large and varied line of air compressors are illustrated and tables of dimensions are appended. *The Iron Age*, February 15, 1906, contained an illustrated description of the Blaisdell self-oiling air compressor.

Boilers.—Parker Boiler Company, Pennsylvania Building, Philadelphia, Pa. Booklet. Points out the advantages of the Parker down-flow boiler, in which the water and the steam move downward or in a direction opposite to that of the flame and hot gases of the furnace, so that the hottest particles of each are in communication and the minimum difference of temperature exists between the adjacent particles of the two. Illustrations of a number of plants where these boilers have been installed are given, as well as the various parts of the boiler itself, and a number of test reports are appended.

Machinery and Supplies.—Contractors' Supply & Equipment Company, 1645 Wazee street, Denver, Colo. Catalogue. Deals with a wide line of contractors' machinery, tools and supplies. It is very complete and covers practically everything required from the smallest machine part to equipment for a complete plant. One of the special machines handled is the Callahan-Walton drag line excavator, for doing all sorts of excavation. This machine is built entirely of steel and has an average capacity of 1200 cu. yd. per working day of 10 hours.

Air Compressors.—The American Well Works, Aurora, Ill. Bulletin No. 115. Illustrations and descriptive matter explain the operation of the American air compressors, which are built in a number of different sizes and styles in both horizontal and vertical models. In the horizontal models the compressor is driven by a steam engine mounted on the same base with it, while the vertical models are arranged for belt, gear or steam engine drive. One of the latter is a mountain-transport air compressor constructed in sections and specially designed for mule-back transportation, the heaviest piece weighing less than 200 lb. In addition, this company makes a portable steam-driven air compressor which is mounted on a wagon frame together with the engine and boiler. Space is given to a special application of the air compressor, the air-lift system for raising water or oil from wells by compressed air, and to accessories, such as an air receiver and an unloader for maintaining a constant receiver pressure.

Shaft Hangers and Belting.—Corbett Supply Company, 143 North Warren street, Trenton, N. J. Folder and circular. The former deals with the Cortay adjustable ball and socket hanger for shafting, ball and socket pillow block and adjustable post hanger. These three types are illustrated and tables are given of the different sizes carried in stock for various diameters of shaft. The other treats of Dick's Balata belting, for which this company is a selling agent.

Milling Machines for Automobile and Motor Manufacturers.—The Ingersoll Milling Machine Company, Rockford, Ill. Two bulletins. No. 18-C illustrates and describes the design of a line of fixed rail automobile multiple-spindle milling machines built especially for manufacturers of automobiles and their parts. The machines shown include a 24-in. three-head model, a 30-in. four-head model and a 24-in. duplex three-spindle machine used for milling the ends of four-cylinder *en bloc* castings as a duplex machine and as a three-head machine for completing all the remaining operations. No. 19-C shows the machines described in the other bulletin in actual use and the illustrations are of actual operations.

Turbine Pumps. — The Watson-Stillman Company, 190 Fulton street, New York City. Mailing card. Devoted to the Watson-Stillman twin volute turbine pump for house tank service and sump drainage. These pumps are designed for supplying water to elevated tanks in private houses, apartments, country residences and factory buildings, where a demand exists for a pump that is simple, needs no skilled labor for operating, is not likely to get out of order, will not consume an abnormal amount of power, and will operate silently. A turbine pump is said to fulfill all these requirements. The illustrations include two horizontal models having capacities of 25 and 150 gal. per minute, a 1-in. single-stage vertical submerged sump pump, and an automatic switch for maintaining the level in the supply tank between fixed limits.

Engraving.—A. Mugford, Inc., 30 Union place, Hartford, Conn. Booklet, 3¾ x 9 in., entitled "A Buyer's Catachism." With questions and answers and typical illustrations it covers the subject of engravings of various kinds, such as wood, wax, line (zinc and copper) and half-tones, explaining the special suitability of each and the kind of copy necessary for their making. In conclusion there is a brief statement concerning the firm, its organization and facilities and the fact that it makes a specialty of manufacturers' catalogues and booklets, particularly in the mechanical line. The concern now maintains sales offices and art departments in New York and Syracuse, N. Y., a complete art and engraving department at Worcester, Mass., and a complete plant at Hartford, Conn., for making engravings and for printing.

The Kempsmith Mfg. Company's New Plant

All of the contracts have now been awarded for the construction of the new plant of the Kempsmith Mfg. Company at Forty-fifth avenue and Rogers street, West Allis, Wis. A spur track from the Chicago & Northwestern Railroad has been completed to the site of the buildings. Ground was broken last week, and the company now expects to have these works in operation by November 1.

There will be four buildings. The initial dimensions of the main structure will be 200 x 250 ft., with a wing 100 x 100 ft., and later it will be extended to 500 ft. in length. It will be of saw tooth construction, concrete foundation and floor, and brick walls. The pattern shop is a separate building, 50 x 90 ft., absolutely fireproof. The power plant, 50 x 100 ft., also fireproof, will contain two 100-hp. boilers and a 200-hp. Corliss engine, direct connected to a 150-kw. generator. The office building will be 40 x 60 ft., two stories and basement, brick and faced stone. All new equipment needed in this plant has been contracted for.

The Wickwire Steel Company, Buffalo, N. Y., is building a 400-ft. extension to the concrete ore dock at its plant on the Niagara River, to provide ore unloading facilities for the new furnace B, which is rapidly nearing completion. With the new addition the company's ore dock will be 1000 ft. in length.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1¾ in. round and square	₩ lb 1.90¢
1½ to 4 in. x ⅜ to 1 in.	
1½ to 4 in. x ¼ to 5-16	2.10¢
Rods—⅜ and 11-16 round and square	2.10¢
Angles:	₩ lb
3 in. x ¼ in. and larger	2.10¢
3 in. x 5-16 in. and ¼ in.	2.35¢
1½ to 2½ in. x ¼ in.	2.20¢
1½ to 2½ in. x 5-16 in. and thicker	2.10¢
1 to 1¼ in. x 5-16 in.	2.20¢
1 to 1¼ x ⅛ in.	2.30¢
⅞ x ⅛ in.	2.40¢
¾ x ⅛ in.	2.50¢
⅝ x ⅛ in.	3.55¢
⅛ x 3-32 in.	4.05¢
Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2½ x 5-16 in	2.35¢
3 in. and larger	2.15¢
Beams	2.10¢
Channels, 3 in. and larger	2.10¢
Bands—1½ to 6 x 5-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.90¢	3.00¢
Nos. 18 to 21	₩ lb 2.95¢	3.10¢
Nos. 22 and 24	₩ lb 3.05¢	3.20¢
No. 26	₩ lb 3.10¢	3.30¢
No. 28	₩ lb 3.20¢	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment, ₩ lb 12 @14½

Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net

Galvanized.

Nos. 14 to 16	₩ lb, 3.20¢
Nos. 22 to 24	₩ lb, 3.55¢
No. 26	₩ lb, 3.75¢
No. 28	₩ lb, 4.10¢

No. 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ lb ..5.75¢
No. 26	₩ lb ..6.25¢
No. 28	₩ lb ..7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd
No. 24 ₩ 100 sq. ft.	$3.85	4.80
No. 26 ₩ 100 sq. ft.	2.95	4.00
No. 28 ₩ 100 sq. ft.	2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.60
A. Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 107 lb	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.50
IX, 20 x 28 with an 8 lb. coating	10.50

Seamless Brass Tubes—

List November 13, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 22¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14½¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14½¢ ₩ lb

Brass Wire—

List August 1, 1908. 14½¢ ₩ lb

Copper Wire—

Base Price, Carload lots mill 14 ¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.

Planished Copper, 1¢ ₩ square foot more than Polished.

METALS—

Tin—

Straits Pig ₩ lb 3½@33½¢

Copper—

Lake Ingot	₩ lb 14½@15 ¢
Electrolytic	₩ lb 14½@15 ¢
Casting	₩ lb 14½@14¢

Spelter—

Western ₩ lb 6¼@6¾¢

Zinc.

No 9, base, casks ₩ lb 8 ¢ | Open ₩ lb 8¼¢

Lead.

American Pig	₩ lb 5 @5¼¢
Bar	₩ lb 6¼@6¾¢

Solder.

½ & ½, guaranteed	₩ lb 22 @22½¢
No. 1	₩ lb 19 @19½¢
Refined	₩ lb 17½@17¾¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb ..@16¢
Halletts	..@15¢
Other Brands	..@9¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting

Rods & Wire	Base Price
Sheets	Base Price

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut and crucible	₩ lb 10.25@10.5
Copper, Heavy and Wire	₩ lb 10.00@10.5
Copper, Light and Bottoms	₩ lb 9.00@9.5
Brass, Heavy	₩ lb 6.75@7.0
Brass, Light	₩ lb 5.50@5.7
Heavy Mechine Composition	₩ lb 9.25@9.5
Clean Brass Turnings	₩ lb 6.75@7.0
Composition Turnings	₩ lb 8.00@8.2
Lead, Heavy	₩ lb .....@3.8
Lead, Tea	₩ lb .....@3.5
Zinc Scrap	₩ lb .....@4.7

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